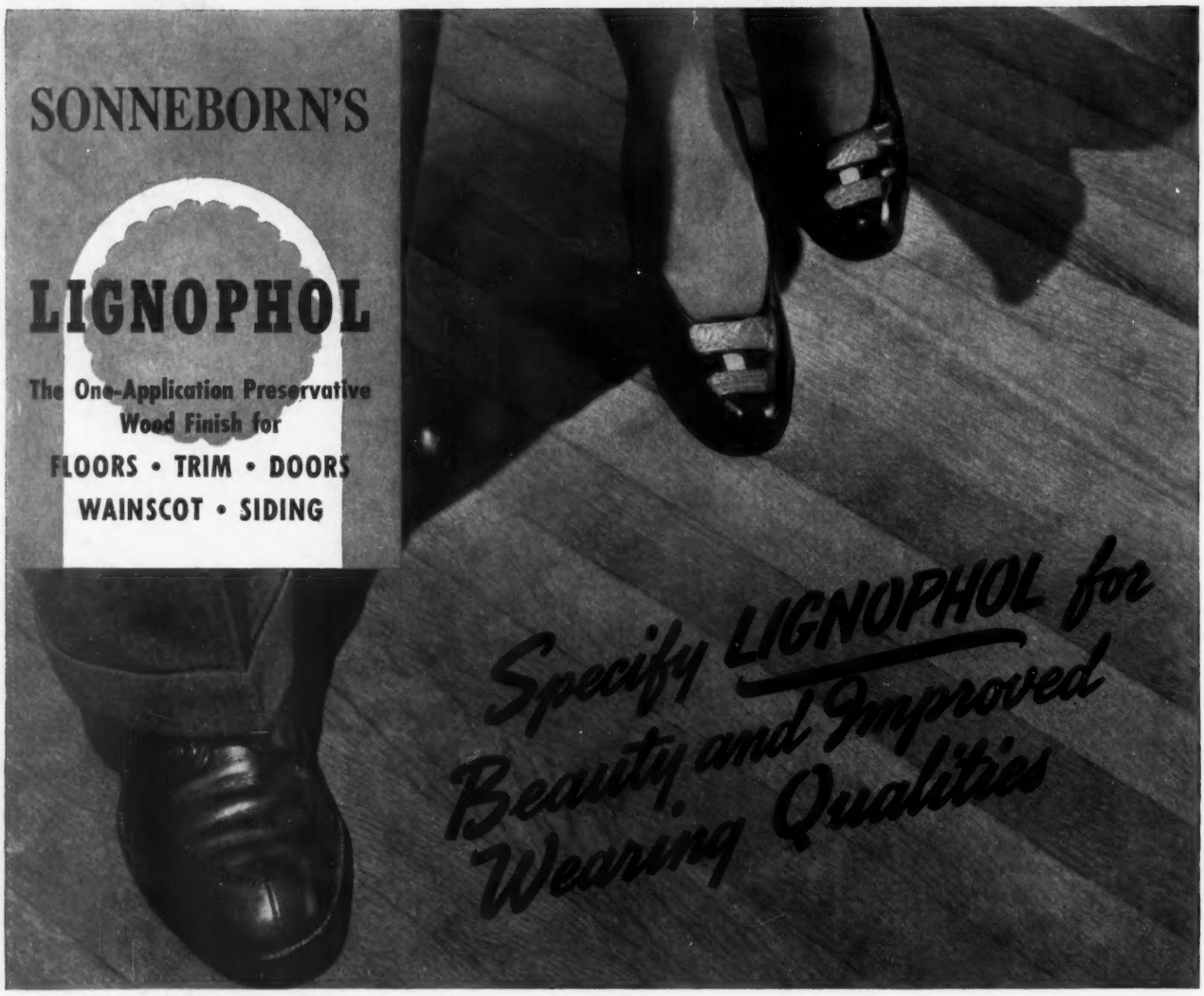
PENCIL POINTS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COVER DESIGN BY *GUSTAV JENSEN*

PENCIL POINTS

KENNETH REID, EDITOR, CHARLES MAGRUDER, MANAGING EDITOR
ALFRED E. GALL, ASSOCIATE EDITOR
DON GRAF, TECHNICAL EDITOR

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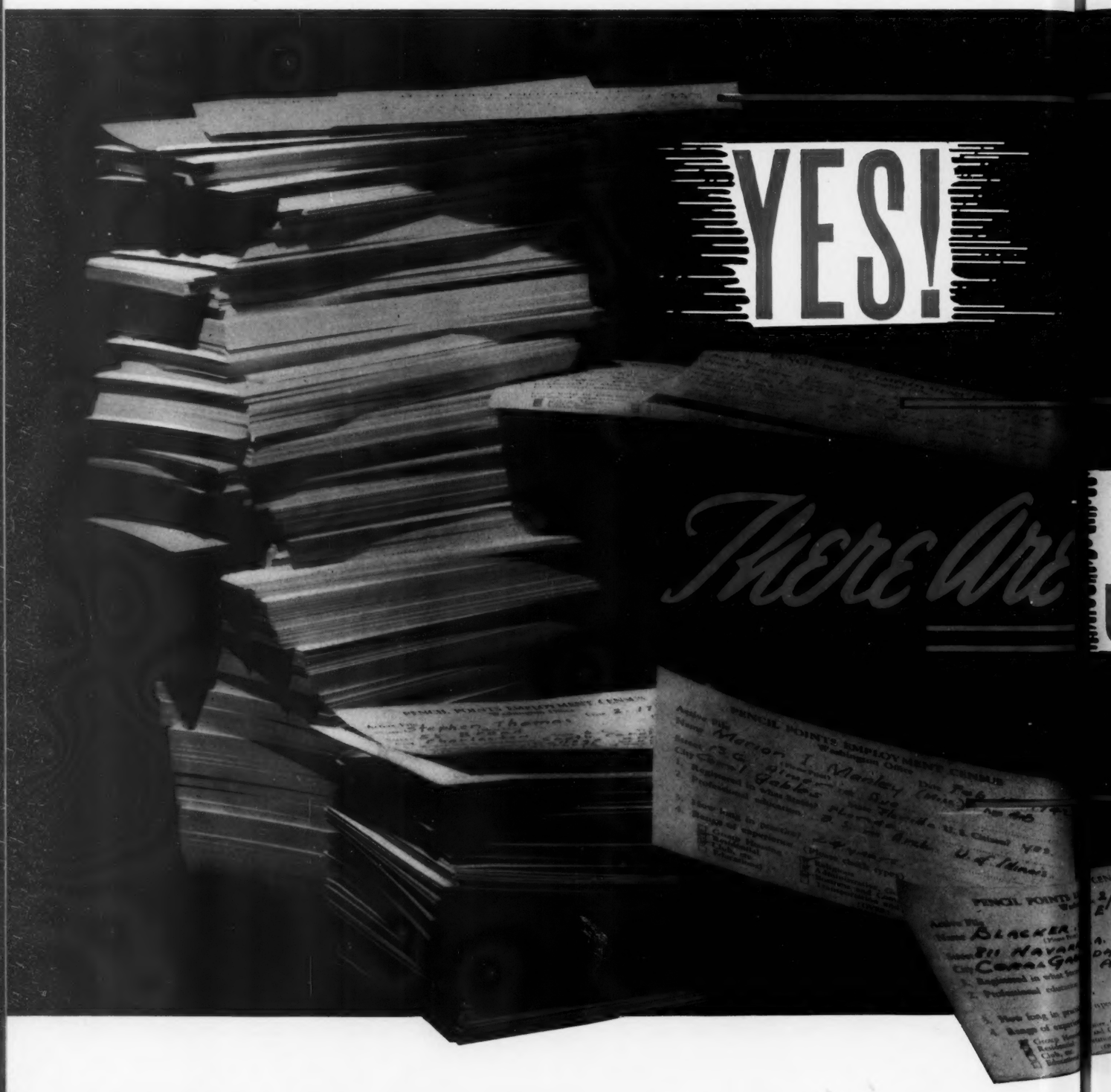
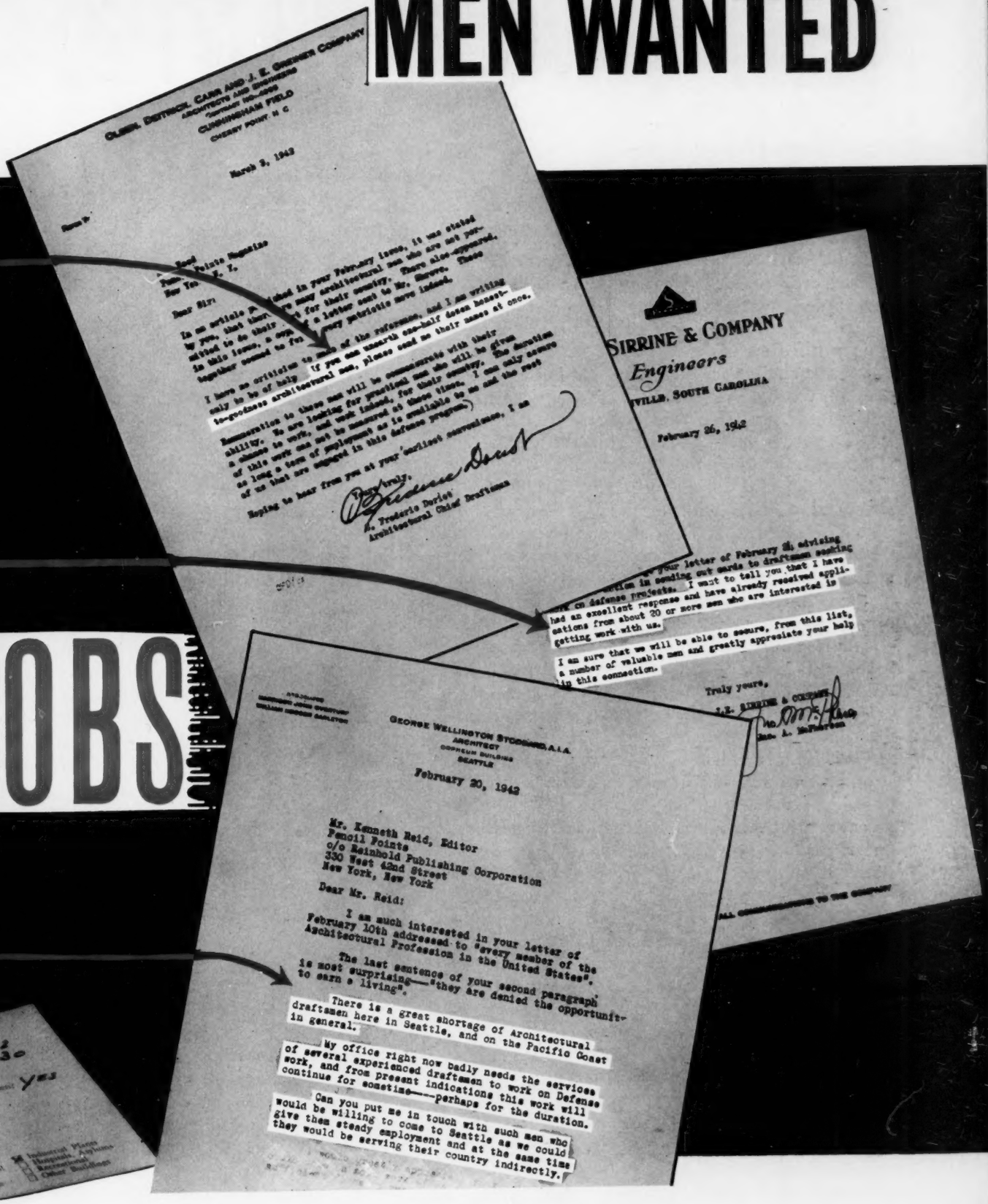
JOBS WANTED



PENCIL POINTS SURVEY CARDS

MEN WANTED


GEORGE WELLINGTON STODDARD A.I.A.
ARCHITECT
COMMERCIAL BUILDING
SEATTLE
February 20, 1942
Mr. Kenneth Reid, Editor
Pencil Points
c/o Reinhold Publishing Corporation
330 West 42nd Street
New York, New York
Dear Mr. Reid:
I am much interested in your letter of February 10th addressed to every member of the Architectural Profession in the United States.
The last sentence of your second paragraph is most surprising——"they are denied the opportunity to earn a living".
There is a great shortage of Architectural draftsmen here in Seattle, and on the Pacific Coast in general.
My office right now badly needs the services of several experienced draftsmen to work on Defense work, and from present indications this work will continue for sometime——perhaps for the duration.
Can you put me in touch with such men who would be willing to come to Seattle as we could give them steady employment and at the same time they would be serving their country indirectly.
SIRRINE & COMPANY
Engineers
February 26, 1942
Truly yours,
J.E. SIRRINE & COMPANY
Chas. L. McFadyen
CLEMENT, DEITRICK, CANN AND J. E. GREINER COMPANY
ARCHITECTS AND ENGINEERS
CUNNINGHAM FIELD
CHERRY POINT, N. C.
March 3, 1942
Dear Sir:
Regards
Pencil Points Magazine
New York, N. Y.
I have no criticism to make of the reformers, and I am writing only to be of help (if you can unearth one-half dozen honest-to-goodness architectural men, please send me their names at once.
Remuneration to these men will be commensurate with their ability. We are looking for greatness now who will be given a chance to work, and work indeed, for their country. The duration of this work can not be measured at these times. I can only assure as long a term of employment as is available to me and the rest of us that are engaged in this defense program.
Hoping to hear from you at your earliest convenience, I am
Very truly,
A. Frederic Darlot
Architectural Chief Draftsman
JOBS

ARE GETTING RESULTS! *IS YOURS IN?*

WASHINGTON PROGRESS

In pursuit of our effort to stimulate the use of architectural skills by Government and industry in the Victory Program, we have arranged with Willis A. Vogel, of Toledo, Ohio, to be the Washington representative of the architectural men who have registered with us. For the present he may be reached by mail through this office at 330 West 42nd Street, New York.

Since the February issue of PENCIL POINTS went to press, we received from President Shreve of the A.I.A. a reply to our letter reproduced therein. He was appreciative of our offer of cooperation, but there developed several reasons why it was not possible at this time to provide space in the Octagon House for our proposed activity. This, of course, does not preclude the coordination of effort that is so desirable, and it is our expectation that Mr. Vogel and the A.I.A. Washington representative will work independently without conflict.

It will be Mr. Vogel's purpose to *cooperate as closely as possible* with Edmund R. Purves, to the end that duplication of effort will be avoided. Both the Institute and PENCIL POINTS are working towards the objective of getting the full strength of the architectural profession into the service of our Nation and its people.

The response to our proposal and questionnaire has been large and enthusiastic. Already we have the records of over 3,500 men, with more coming in every day. This is evidence of the existence at this time of a *substantial reservoir of high-class personnel* with mental habits of planning and coordination and a broad background of familiarity with technical processes. Ideally, all these men should be engaged in things architectural, working either on projects for immediate construction or on advance planning for post-war construction. There is no reason, however, why they could not effectively fill many types of technical and semi-technical administrative positions in industry or Government. It is our purpose to *work for recognition of this principle* and also to establish contact between as many of the men as possible and the jobs that need to be done.

As Mr. A. D. Taylor pointed out in his Washington Report for February, there is an acute need for a satisfactory way of making available to individuals desiring employment the names and locations of Victory Program construction projects, together with names of the Architect-Engineers involved. As a result of our employment census, we have already received several requests from Architects or Architect-Engineers doing such projects to furnish them with the names and addresses of the available draftsmen of different grades. We have been able to help in these cases and we urge that other firms seeking men let us know of their needs.

PROFESSIONAL UNITY

The trend of these times, as we have observed here before, is definitely towards improved organization of the architectural profession. The profession has been handicapped in the past because the A.I.A., its only national body, included as members but a fraction of the total number of architectural men. This situation has been remedied to some extent through the affiliation with the Institute of a number of State Associations. These affiliations have now brought the total number of architects so organized to about 8,000, which is still far short of complete representation.

There has recently developed in several sections of the country a movement towards further consolidation through merging the various architectural societies that have existed side by side in the same area and unifying their direction and action. *This we believe to be a healthy movement.* We would like to see it carried forward until The American Institute of Architects becomes as powerful in this country as the R.I.B.A. is in Britain.

We would like to see the Institute include every reputable architect, and we would like to see associate and junior memberships extended to architectural draftsmen and students in the architectural schools. The profession of architecture does not consist simply of men who happen to be in practice for themselves at a given time. We have long maintained that it includes *all of the men who make their living from architecture* and also those young men who are embarking in the schools on the first steps towards eventual professional practice.

A body such as we visualize would include as members more than ninety percent of the entire profession and would, as a result, *speak with a powerful voice* on all matters pertaining to the relations between architecture and society. *There need be no lowering of true professional standards and ideals.* On the contrary, there can and should be a great strengthening of professional unity of purpose to serve society honestly and well. It is impossible that any such unity of purpose could ever be attained with architectural men divided into many small groups existing side by side, ready victims of the human weakness to fall into petty disagreements over matters that are relatively minor. The time has come to get together, to overlook small irritations and jealousies, and to join our strength in carrying out the true objective of every architect—the improvement of man's environment.

The current emergency offers to The American Institute of Architects an opportunity to become such a body, *much better organized, more completely representative,* and *more powerful for the common good* than it has ever been.

WILLIS A. VOGEL

Since Monday, March 16, the able and energetic man whose picture appears above has been in Washington acting on behalf of the Architectural Men registered with us who want to be of service to the Nation in its war effort. He is to be known as Technical Personnel Adviser. Mr. Vogel has, we believe, the qualities that will make him effective in this work he has undertaken. He is Vice President of the Toledo Chapter of The American Institute of Architects and a Vice President of the Society of Ohio Architects. He is dedicated to the principle that the technical skills of the architect can and must be used in every possible way in the Victory Program. He will remain in Washington, working for YOU, as long as needed.

NOTHING MORE DESERVING of commendation has happened recently in the way of Government reorganization than the creation of the new National Housing Agency and the appointment of John B. Blandford, Jr., as its Administrator. For altogether too long there has existed confusion due to conflicting and overlapping functions of no less than sixteen different federal agencies that had to do with housing. *The reduction of this chaos to a clear and orderly set-up will be, we believe, to the advantage of all parties concerned.* The division of the new administration into three principal units—one dealing with publicly-financed housing, one with privately-financed but publicly-insured housing, and one with the financing of individual home ownership—makes a great deal of sense.

As for Mr. Blandford, his executive and administrative abilities were demonstrated beyond question during his service as General Manager of the Tennessee Valley Authority, from 1933 to 1939. We look for a steady improvement in government housing policy and activity from now on.

THE ASTOUNDING POSITION of the National Association of Real Estate Boards, in regard to War Housing, was reported in newspapers just prior to the announcement of the new housing set-up. This association made public a resolution advocating that, "Housing for war workers built with public funds be temporary in character with minimum facilities essential to a healthful life for war workers and such housing be erected on the basis that it shall be removed or disposed of in accordance with the wishes of the local community as soon after the conclusion of the War as possible."

Herbert U. Nelson, Association Secretary, went on record to the effect that the apparent loss of the one billion dollars set aside for Defense Housing could be written off as one of the minor expenses of the War. This light brushing aside of such a substantial public investment is, in our opinion, quite unjustifiable. Every architect worthy of the name should raise his voice in opposition to the real estate proposal.

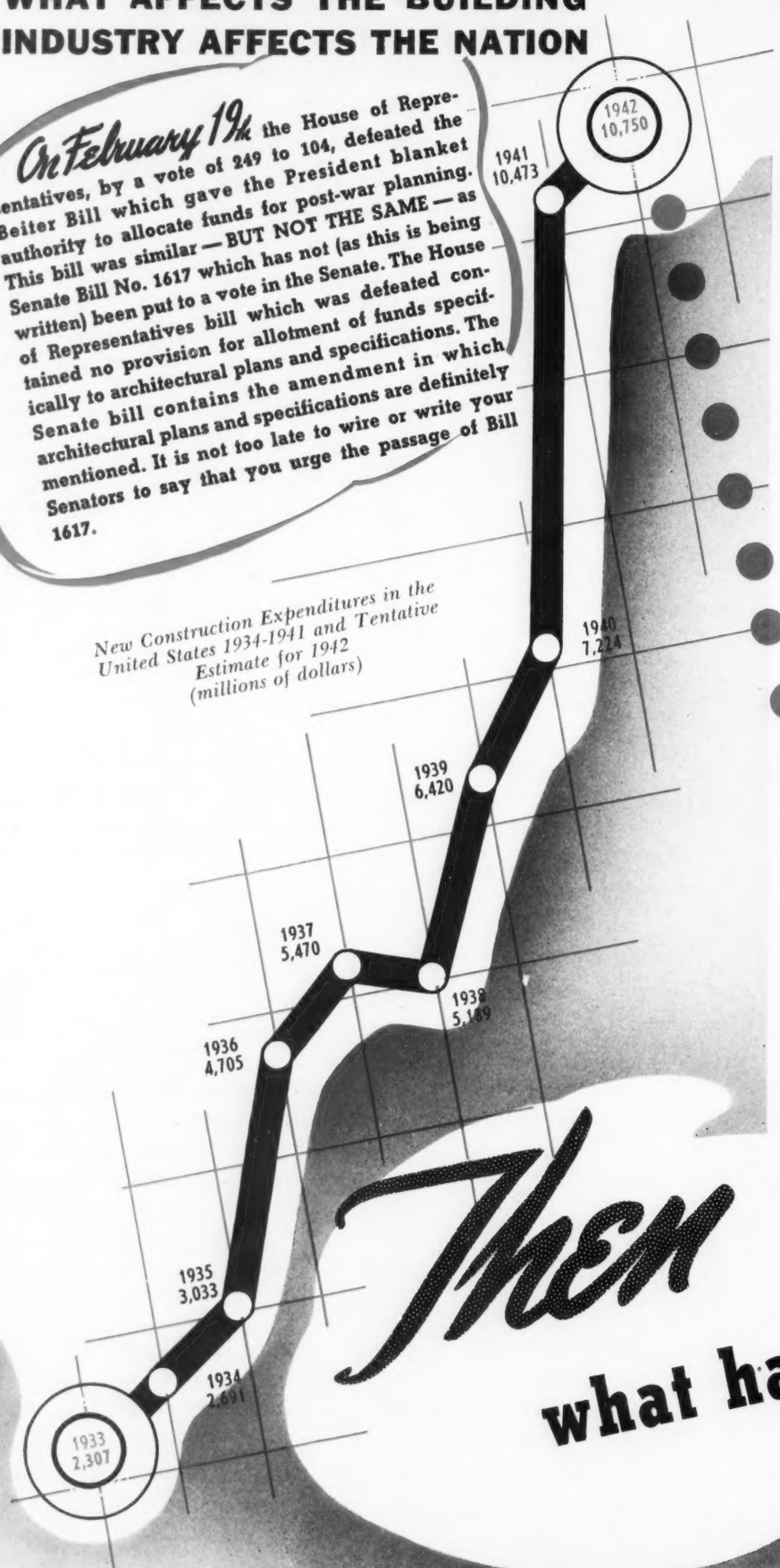
A large proportion of the needed War Housing can and should be permanent in character, planned to be a long term asset to the communities involved. The motive behind the expressed wish of the Real Estate Boards is clearly to preserve the fictitious values of obsolescent housing in those same communities. If their suggestion were to be carried out it would amount to an expensive public subsidy for the benefit of a comparatively small group of private individuals who have a vested interest in retarding intelligent housing progress. One recalls the statement by Nathan Straus, in his letter of resignation as Administrator of U.S.H.A. last January, in which he charged, "The ownership and operation of slums is still one of the largest and most profitable industries in America."

WHEN THE BUILDING INDUSTRY

WHAT AFFECTS THE BUILDING INDUSTRY AFFECTS THE NATION

On February 19th the House of Representatives, by a vote of 249 to 104, defeated the Beiter Bill which gave the President blanket authority to allocate funds for post-war planning. This bill was similar — BUT NOT THE SAME — as Senate Bill No. 1617 which has not (as this is being written) been put to a vote in the Senate. The House of Representatives bill which was defeated contained no provision for allotment of funds specifically to architectural plans and specifications. The Senate bill contains the amendment in which architectural plans and specifications are definitely mentioned. It is not too late to wire or write your Senators to say that you urge the passage of Bill 1617.

New Construction Expenditures in the United States 1934-1941 and Tentative Estimate for 1942 (millions of dollars)



LEOPOLD ARNAUD, Dean
Columbia Architectural School

Without a well-planned and a well-executed post-war program, obsolescence will break down to deterioration of catastrophic proportions. By 1945 one third of all the 40,000,000 dwellings in the country will be more than fifty years old—past the accepted age of efficient usefulness. By 1945 the 6,000,000 dwelling units which were in need of major repairs in 1935 will probably be unfit for use. By 1945 the ten billion dollars' worth of commercial construction undertaken during the boom years of the 1920s will be about twenty years old, and ready for discard, according to the "actuarial" tables of the Treasury Department for tax amortization purposes. Paradoxically, the immense and inevitable post-war problem constitutes a prime opportunity to utilize expanded industry, no longer needed for national defense, in rebuilding and reorganizing the nation.

CHARLES D. MAGINNIS, F.A.L.A.
Maginnis & Walsh, Boston

I have been greatly impressed by the forehandedness of the English in this particular respect, in spite of the fact that the national mind has constantly been harassed by impending attack. Studies have been proceeding there for the world that is to follow. In this country, we detect clearly enough that the problem of post-war employment has possibilities of great social upheaval, but so far there is no realism about the effort to solve the problem in the thoughtful terms you indicate. More power to you!

G. C. DENEBRINK
Armstrong Cork Company

Nothing, of course, must be permitted to interfere in the slightest way with our country's war effort. To the extent that talent and man-power, not essential to the war effort, might be available to undertake such a post-war planning program, I believe that this activity would be both desirable and constructive. A sound building program, carefully prepared in advance, will provide one very effective solution to post-war unemployment.

Then what happens

COMES BACK FROM THE WAR

VERGIL D. REED, President
American Marketing Association

On every hand we hear the cry "Production is the thing." It is today—for the duration. It will not be tomorrow—after the War. Then distribution is the thing. If free enterprise has the merits we claim for it—and I think it has—then now is the time to lay plans which will assure its survival. The public, too, had better be sold on those plans as an assurance of equitable distribution.

G. DONALD KENNEDY
Michigan Highway Commissioner

One of the greatest and most important problems we, as Americans, are now facing is that of the post-war period. Nothing matters if we fail to win this war, but it would be a sad development if, upon winning it, we should lose the peace that follows by failure to provide adequate, worth while, sound projects for a public and private works program in the post-war period. That such a program will be necessary is almost a foregone conclusion. It is our responsibility to prepare now with complete plans and drawings, the sound projects which will not only furnish employment but contribute to the economy of our various states and the nation.

TIMOTHY L. PFLUEGER
San Francisco

Most emphatically agree with PENCIL POINTS' proposal for necessity of planning now for post-war construction. Wasteful expenditures of last decade without planning proves this. Needs developed by war and opportunities created by increased production of new materials demonstrate that problems should be tackled now in a broad fundamental manner looking toward a replanned nation, not merely toward piddling and stop-gap construction.

ROBERT D. KOHN, F.A.I.A.
New York City

The value of advance planning of public works, which you so effectively demonstrate in the supplement to PENCIL POINTS for February, is beyond question. "In time of war, prepare for peace" is a good slogan for the building industry right now. What you suggest as a first step (namely writing your Senator favoring Senate Bill 1617) is important. All the arguments in favor of such planning which you mention with relation to public improvements are equally applicable to private work plus the possibilities of the spread of work over that much larger group of architects acquainted with needs of clients.

FRED W. JONES, Editor
The Architect and Engineer

Heartily agree with your early planning set-up for post-war building and would like to cooperate to the extent of giving your plan the widest possible publicity on the Pacific Coast. Competent architects and engineers, for no fault of theirs, have not been called upon to contribute their talents in behalf of their country. Right now is the time to put forward effective measures that will take care of this wasted architectural energy. And how better could this talent be directed than to start planning now for the tremendous post-war building revival that is sure to come?

ALBERT KAHN
Detroit

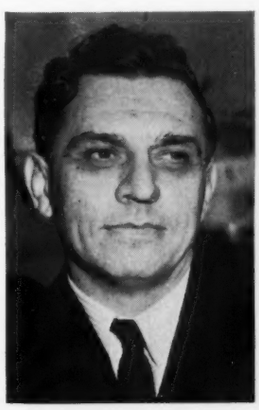
I strongly favor the plan of preparing for post-war work now. Governmental work to tide us over the period immediately following the cessation of war is imperative so as to give employment to returning soldiers. All that can be done now will be invaluable in expediting return to normal. It is of utmost importance, therefore, to enlist architects and engineers today out of work and not in military service.

ALFRED RHEINSTEIN,
Acting President
New York Building Congress

The correct application to post-war planning of the professional skill now unused would produce manifold wholesome results. It will add to civilian support essential to a sustained war spirit and it will prevent the loss of skills which survive only with practice. Probably the next influential movement in regard to building construction will be the replacement of obsolete structures with new ones, so arranged as to offer suitable accommodations for modern traffic, both on the highways and for parking, to provide for airplane landing fields and give more value to light and ventilation.

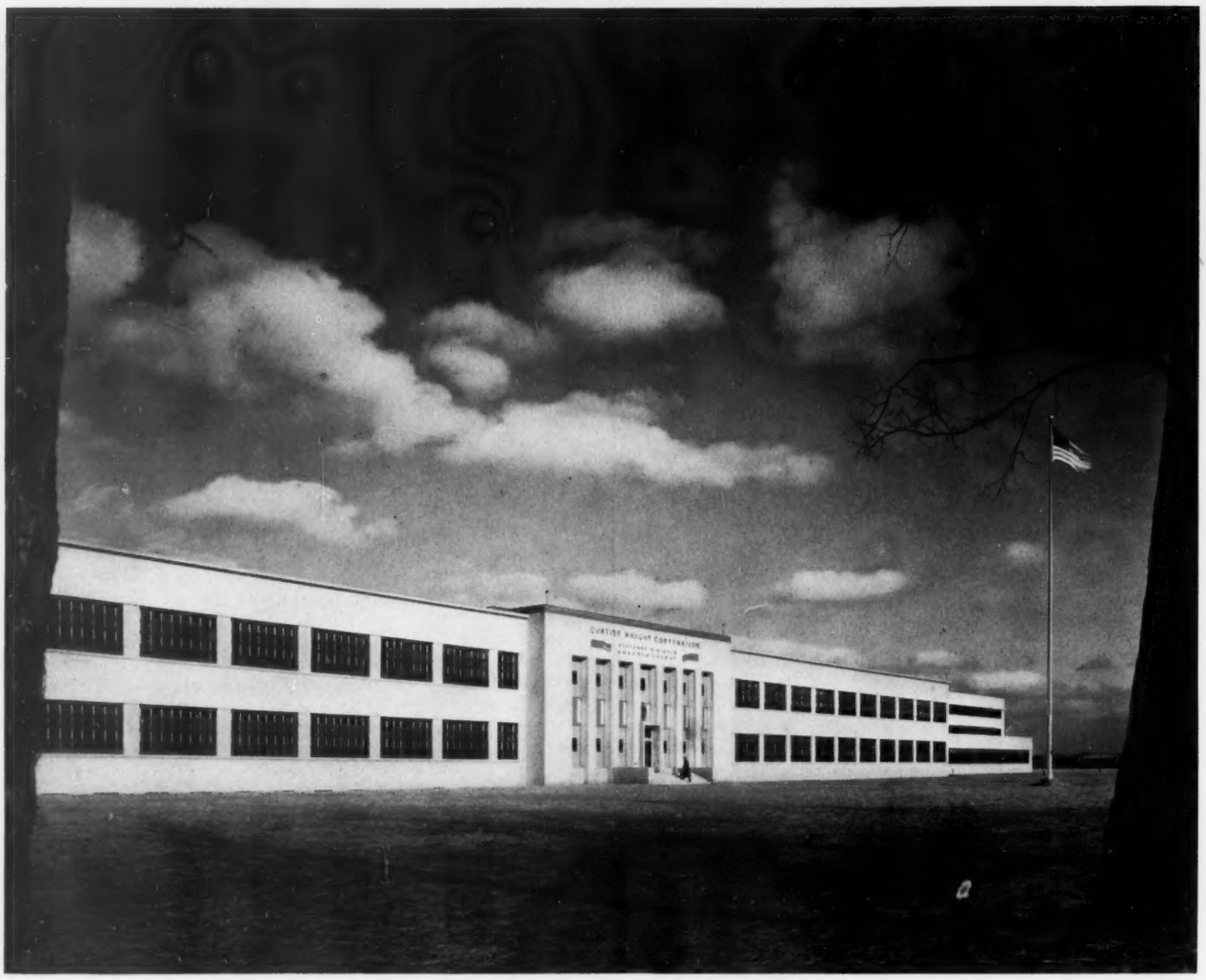
FIORELLO H. LA GUARDIA, Mayor
New York City

As terrible as the war is, it doesn't frighten me as much as a consideration of the post-war period does, with its readjustment of surplus, semi-public works and private industry. This reservoir should be a complete, detailed working plan with specifications, so that we can start working immediately.



RAYMOND CLAPPER
New York World-Telegram

No one would wish President Roosevelt and his war organization to take much time out now to plan for the world after the war and so risk losing the war. However, the very fact that the government is limited in what it can do now makes it all the more necessary that others carry on the study and discussion. This is the period in which specialists can be assembling the materials, surveying the possibilities, working over the possible line of action. Unfortunately, the House recently voted down a proposal which would have authorized funds to enable the National Resources Planning Board to proceed with studies. Aside from the international problems, much internal preparation must be made in order to avoid a severe collapse when war production is sharply reduced. Much work by states and local governments will be necessary. It should all dovetail with national public-works programs. But the House refused to authorize such studies. Unless more encouragement is given, we are apt to reach the end of the war as unprepared for that drastic changeover back to peacetime work as we were when the necessity of changing to war production hit us.



ADMINISTRATION BUILDING

BY ALBERT KAHN, INC., ARCHITECTS AND ENGINEERS

Notable example of the 1942 style in industrial architecture that is reflecting the fast tempo of the Victory building program – characterized by insistence on construction economy – is the Administration Building of the new airplane plant for Curtiss-Wright Corporation in Central Ohio. Non-essentials have here been eliminated and simplicity of line heightens the effectiveness of the design, without sacrificing the monumental character that distinguishes Kahn's most important buildings. The cut stone veneer and pilastered openings of the central block of the building accent the entrance. Glass block panels between the two-story pilasters offer an interesting contrast to the long rows of steel sash in the flanking bricked wings. The Lobby (illustrated across-page) and the offices above it are thus as well lighted as the long series of clerical departments and work rooms around the building.

From general offices to executive offices the interior has been strikingly furnished—utter simplicity being the keynote. (With the exception of the lower photograph across-page, from Baker Art Gallery, all photographs were made by Hedrich-Blessing Studios, of Chicago.)

Fluorescent units, concealed in the acoustically-treated ceiling, light the Lobby. Walls and furniture are finished with bleached walnut. The floor is terrazzo

Working areas are exceptionally well lighted. The offices for junior executives (photographs above) are separated by metal and glass partitions. Clear glass is used in partitions between the offices, and frosted glass is used between the offices and the corridors. The executives' dining room, in the basement, has a restful atmosphere (below). Wainscoting and molding are of knotty pine, and the plaster walls are finished in a neutral tint. In the basement, too, are additional offices, a well-equipped plant hospital, personnel departments, record storage vaults, and fan rooms

WRIGHT AERONAUTICAL AIRCRAFT ENGINE PLANT

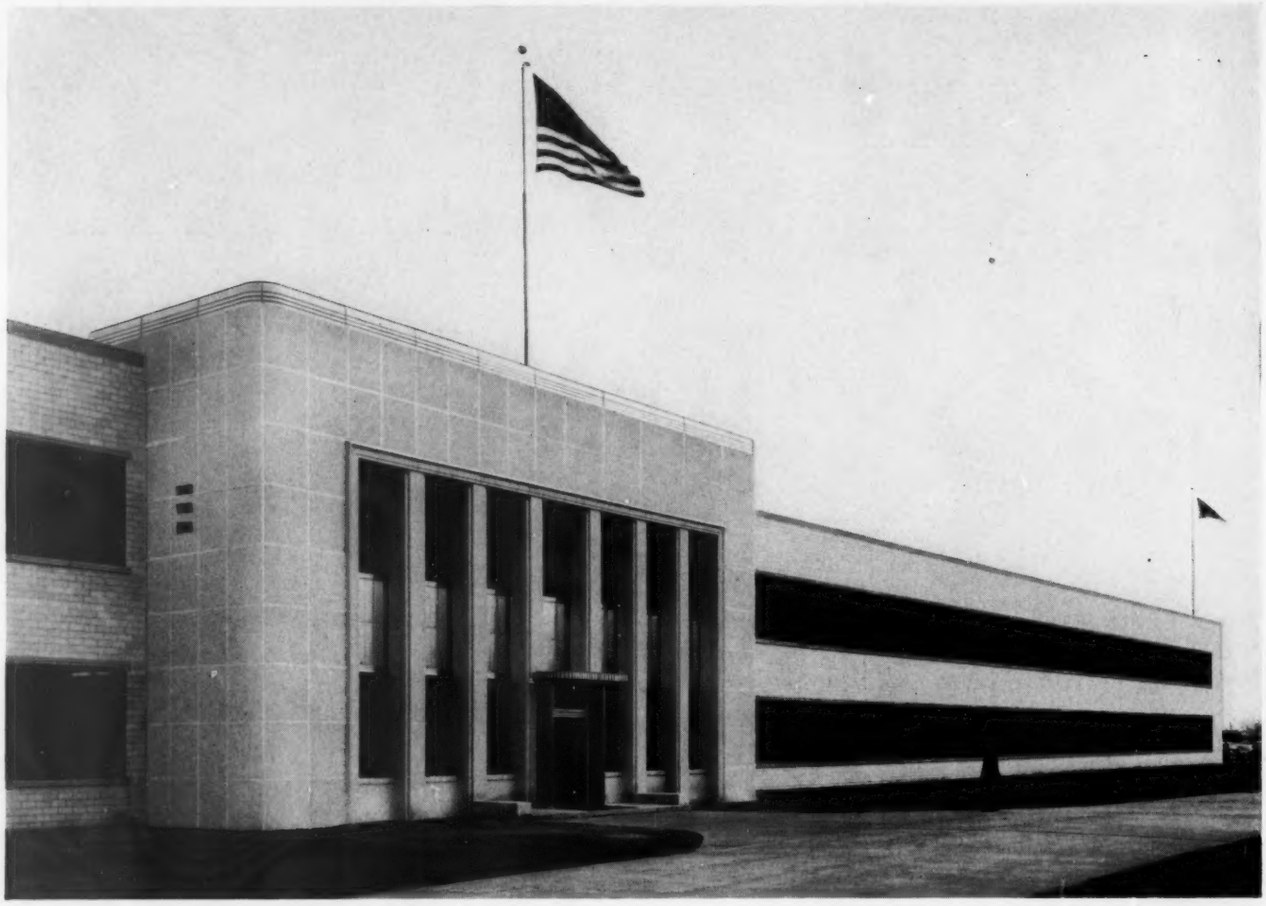
BY ALBERT KAHN, INC., ARCHITECTS AND ENGINEERS

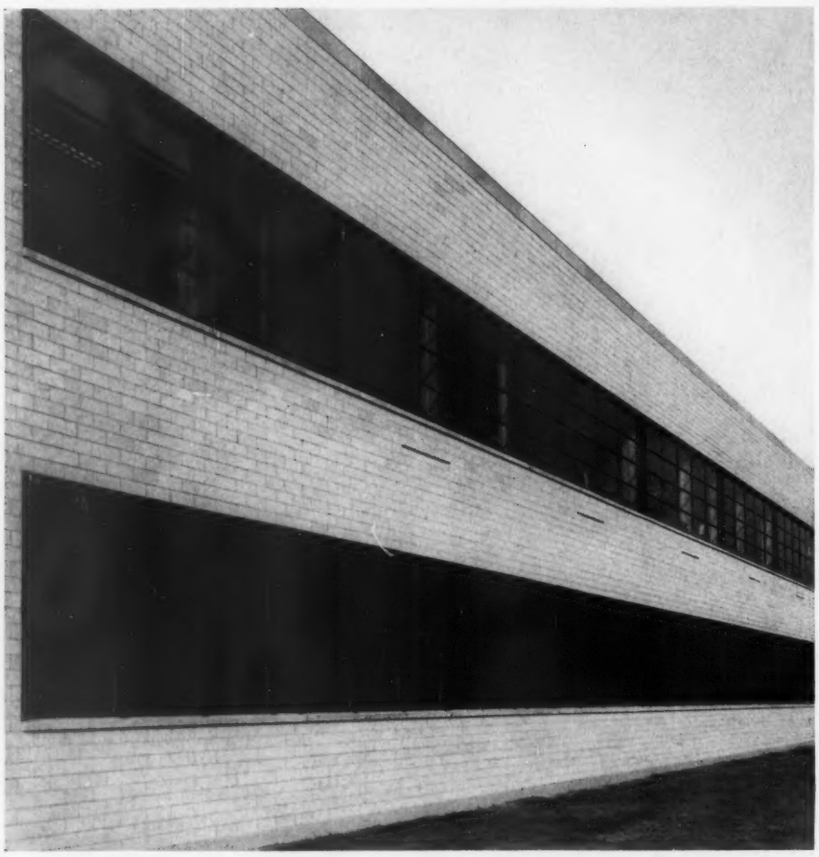
The vast aircraft engine plant designed by Albert Kahn for Wright Aeronautical Corporation—manufacturers of power plants for leading types of transport and military planes – is representative of a new direction in design of large-scale industrial construction. The typical peacetime factory had taken form as a long, narrow building admitting maximum light and air, cooled by air drawn through the windows and exhausted through open sash in long rows of monitors, and housing various "departments" of mass production machinery. But here we have a compact, single-story work area that is air-conditioned, flooded with shadowless fluorescent light, and readily "blacked-out" without interruption of the 24-hour-a-day production schedule of the plant, designed by plant engineers to apply the "in line" principle of continuous mass production as developed there.

Coordinated with the main building, which has been described by the architect as the largest single-story air-conditioned building in the world (see PENCIL POINTS, October, 1941, page 660), are the Office Building presented on the following pages, a Power House, Test Cells, Chip Handling Building, and an Aluminum Foundry and various auxiliary structures. The site, chosen for its proximity to an industrial population and accessibility to transportation, fuel supply, power, and water, affords ample room for future expansion of the plant. Incidentally, through overlapping of planning, purchasing, and construction, the first factory unit went into operation just 152 working days after ground was broken late in 1940.

The Office and Engineering Building illustrated in this issue is a T-shaped reinforced concrete unit (see plans on pages 132-133) adjoining the main assembly building. It affords 67,040 square feet of area for the clerical, administrative, and executive offices. It is air-conditioned, like the main building, and adequately lighted both naturally, through the long, continuous strips of steel-sash, and artificially, by fluorescent units of higher intensity than the 30-foot candle illumination provided by the fluorescent systems in the factory units. Every thought has been given in the buildings to employee convenience and comfort. There is a cafeteria seating 2,500 served by adequate kitchen facilities, and the layout includes great parking areas strategically-located to serve the production and administration buildings.

Before the era of equipment for adequate control of temperature, lighting, and production noise in the great industrial plants, there was always seasonal slackening of work and variation efficiency through each day, due to the effect of exterior conditions. For a plant pushed to top-speed production for Defense, Kahn's answer was effective temperature control through circulation of refrigerated water in 70 coil systems that cool and dehumidify air that is taken into the factory and administrative units. When heat is wanted, hot water circulates through the same coil systems.

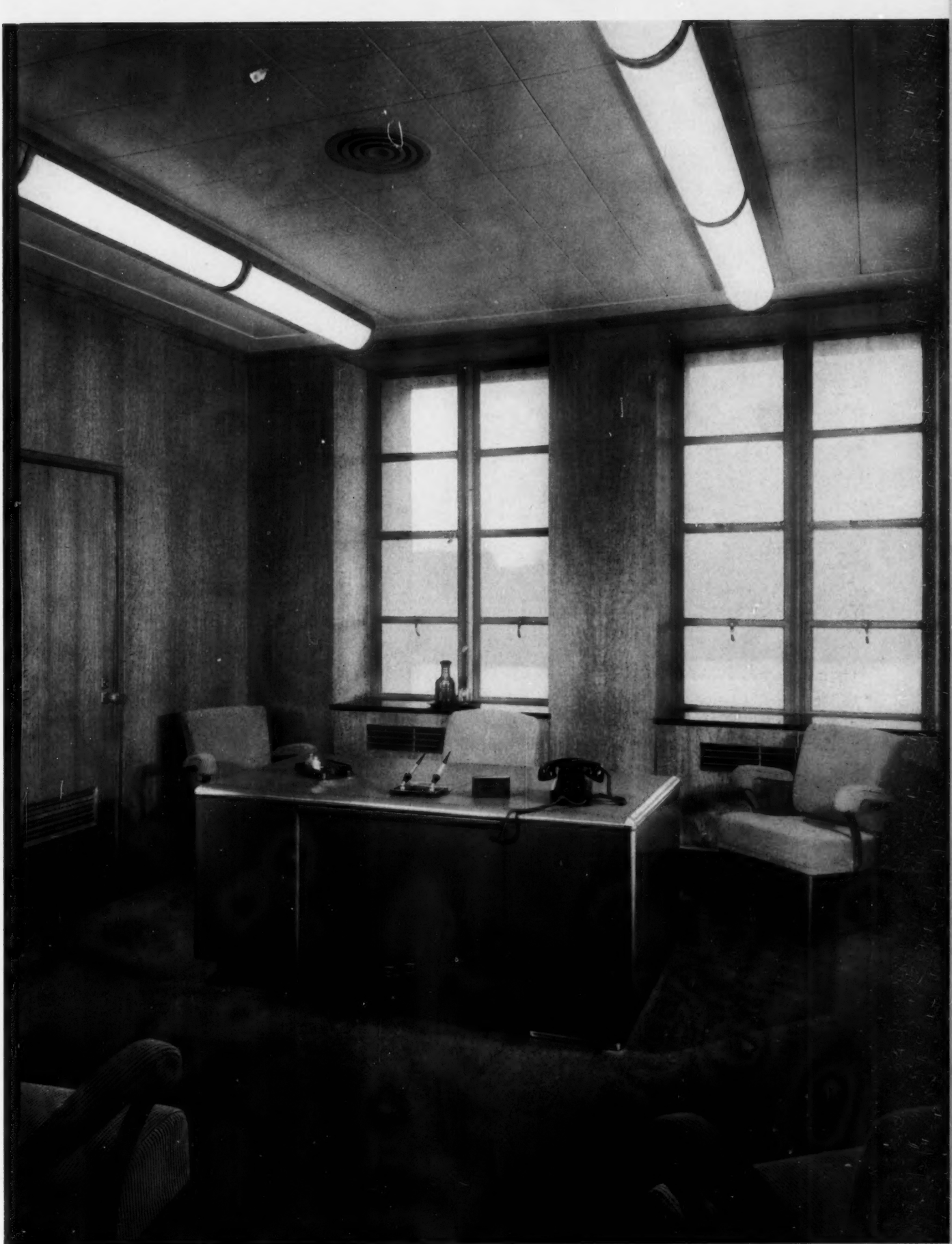




The dignity and importance of a great industry are ably expressed in the architectural treatment of the Office and Engineering Building of this Wright Aeronautical Corporation plant, shown here in photographs by Hedrich-Blessing Studio, Chicago. The entrance (above) is marked by the vertical openings and a facing of cut stone —both contrasting effectively with the light-toned glazed terra cotta and long strips of continuous steel sash used on the flanking wings

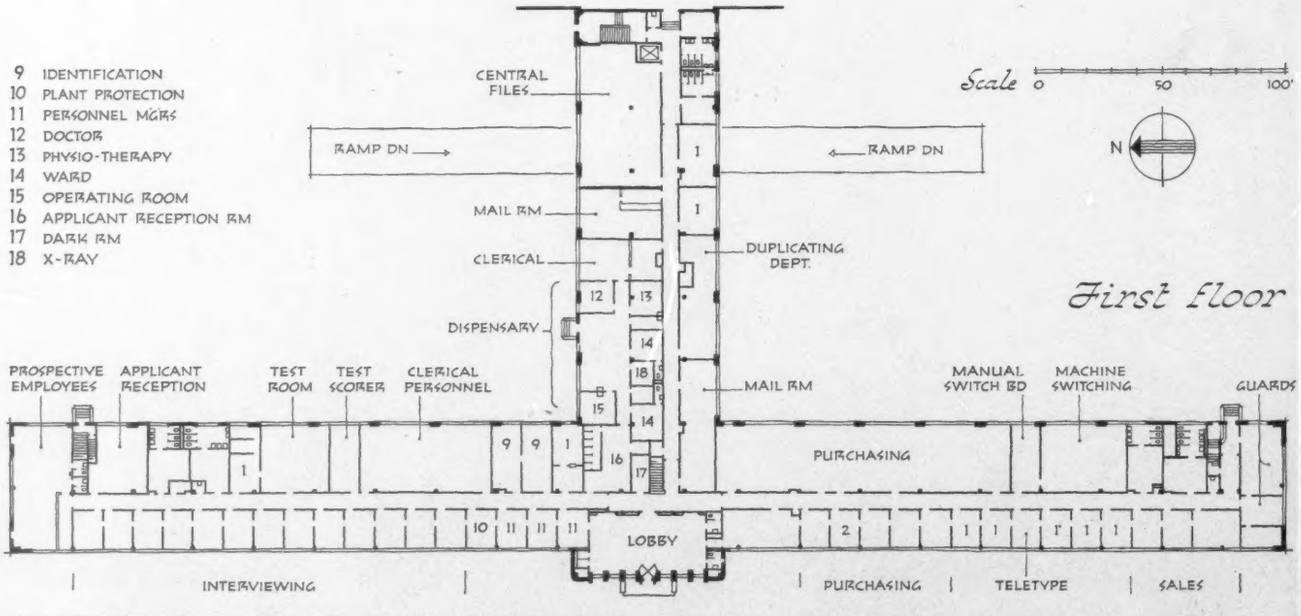
The Executive Offices are handsomely finished with Flexwood walls and acoustic tile ceilings, and are lighted by fluorescent units. The photograph across-page was taken in the office on the second floor just above the Lobby (See plan on page 133). The Office areas, factory area, and cafeteria in the Main Building, are air-conditioned

ASSEMBLY PLANT FOR WRIGHT AERONAUTICAL CORPORATION —



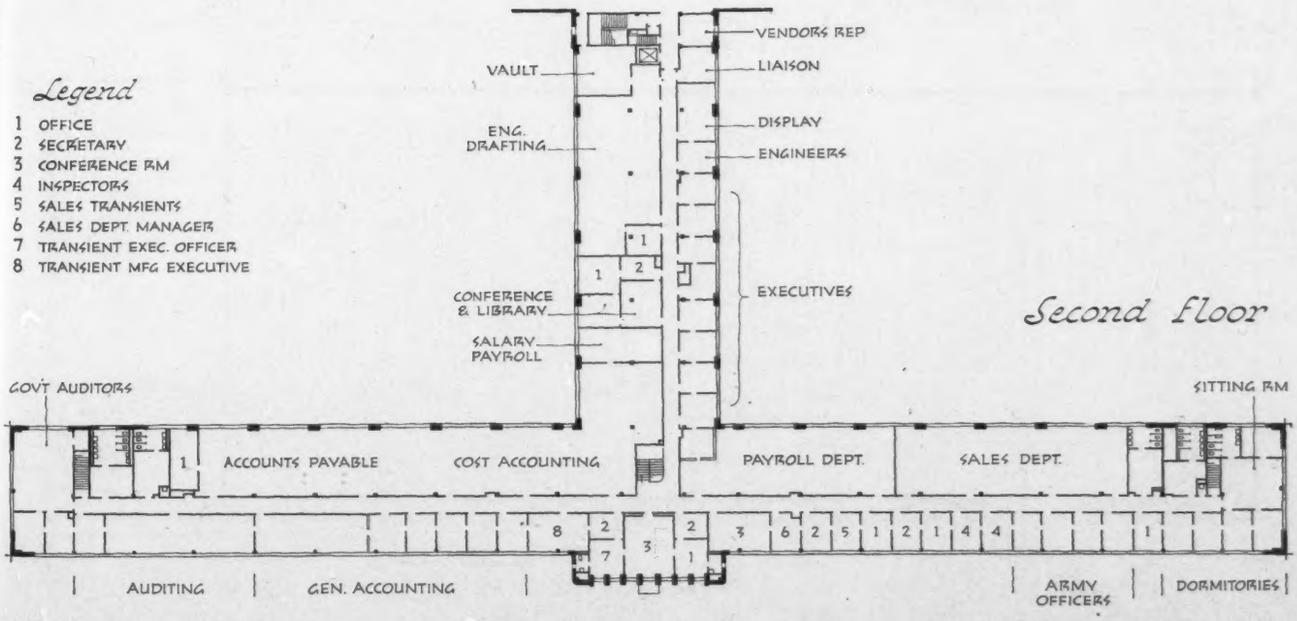
BY ALBERT KAHN, INC., ARCHITECTS AND ENGINEERS, DETROIT

The entrance door opens directly into a spacious Lobby that is arranged for control by a single attendant. The only decoration is the red and blue Wright Medallion in the terrazzo floor. This Lobby is always well-lighted; by windows across the front or by the recessed fluorescent ceiling units



ASSEMBLY PLANT FOR WRIGHT AERONAUTICAL CORPORATION —

Lighting is also a prime consideration in the Clerical Departments, as this photograph shows. The ceilings and floors are sound-absorbent and all of this portion of the plant is air-conditioned. The plans (below) indicate efficiency of the administrative set-up, also on a "straight-line production" basis



BY ALBERT KAHN, INC., ARCHITECTS AND ENGINEERS, DETROIT

FOUNDATION .....Reinforced concrete basement wall and floors

WATERPROOFING .....Ironite method

FLOOR CONSTRUCTION.....Reinforced concrete slab

ROOF.....Cement tile plus 5-ply roofing *on factory building;* concrete plus 5-ply roofing *on office building*

ROOF INSULATION.....Corkboard and granular type

GLASS BLOCK.....Used on exterior stairs

MATERIALS AND EQUIPMENT

SHEET METAL .....Copper flashing and gutters; galvanized iron ducts, etc.

SOUND INSULATION ....Acoustic ceilings *in lunchroom and in engineering offices*

WINDOWS.....Continuous steel sash with wire glass in monitors, and obscure glass elsewhere. *Factory* has heat-resisting glare-proof glass on west and south side

FLOOR FINISHES.....Terrazzo *in lobby and office toilets;* asphalt tile *in offices, corridors*

WALL CONSTRUCTION...Terra cotta tile with stone sills and copings; brick walls; interior partitions of glazed terra cotta tile

INTERIOR WALL FINISH.Travertine *in lobby;* glazed terra cotta tile; *Executive offices* have flexible cloth-backed veneer over plaster; others are tile plastered with wood sash and trim, and wood sash doors

HARDWARE.....Standard brands except for electric control

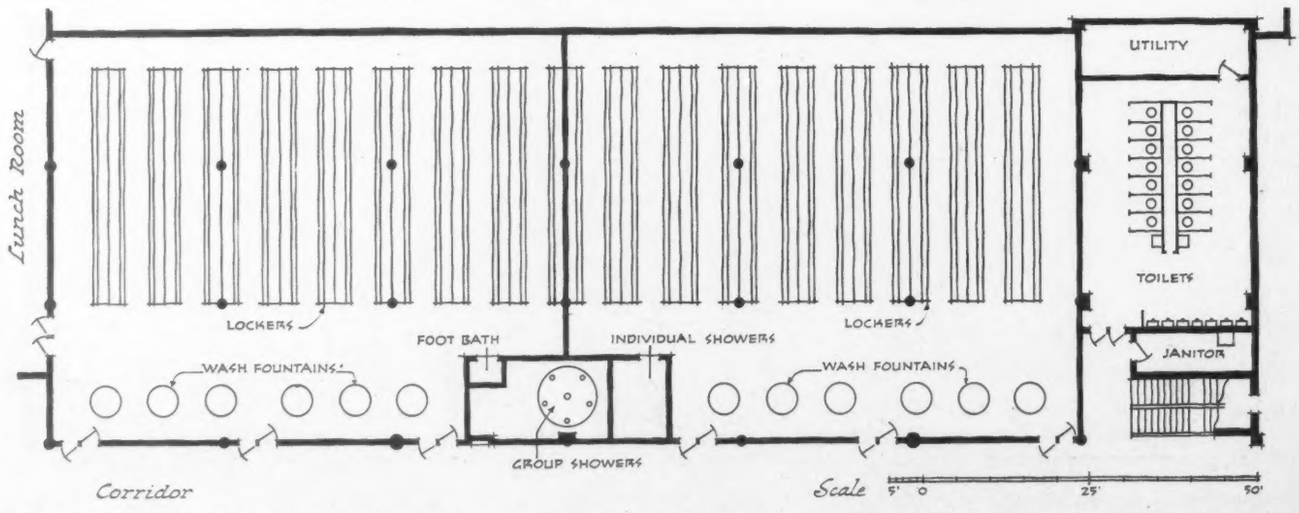
ELECTRIC .....*Office* has fluorescent lighting fixtures; two 40-watt fluorescent tube fixtures suspended on messenger cable *in factory;* bus duct wiring system *in factory;* distribution panels on columns

PLUMBING .....Wash fountains, group showers, etc.; piping of vitrified tile—*storm and soil;* cement—*storm;* cast iron—*sanitary, soil;* galvanized iron—*soil pipe above ground, branch vents and wastes;* copper—*hot water and circulating;* black steel—*gas and compressed air;* galvanized steel—*cold water circulating*

AIR CONDITIONING.....Large fans on overhead platforms, supplied by chilled water; individually-controlled exhaust fans

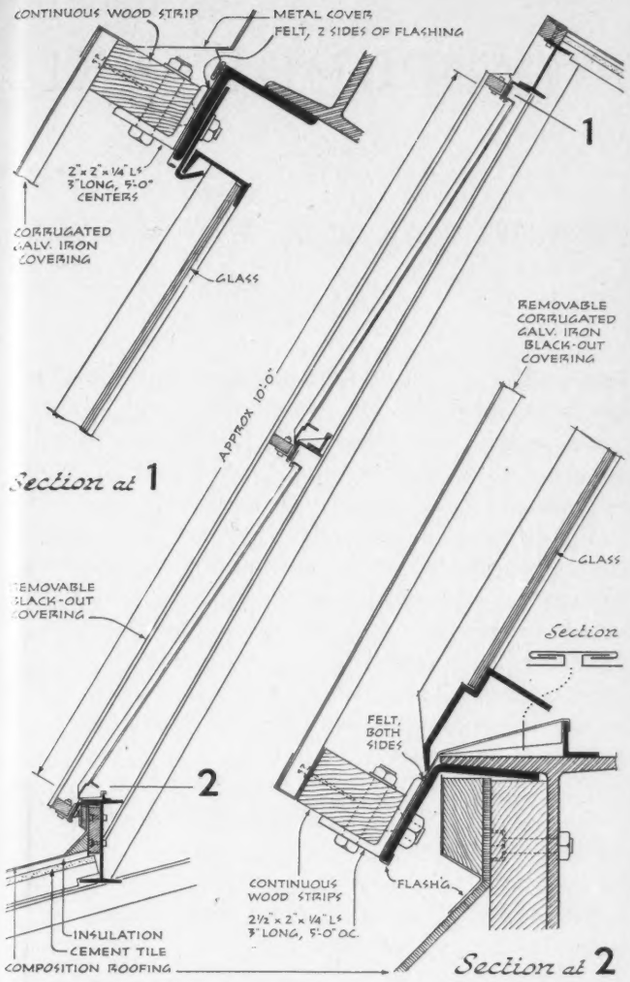
HEATING .....*Office section* and *office building* have direct radiation of the convector type. Building is zoned for control purposes; *basement locker rooms, dining rooms, kitchens, etc.* have hot blast system; *factory* has piping connected to coils in various fan systems which circulate warm air in the winter, cool air in summer. *Truck wells, shipping areas, and outside bays* are heated by overhead unit heaters supplied with steam. Pulverized fuel used, with oil burner for stand-by service. Radiators of the convector type; some cast iron ones of the wall-hung type

OTHER EQUIPMENT....Factory call system; sprinklers; electric kitchen ranges; stainless steel kitchen equipment; aluminum kettles for kitchen

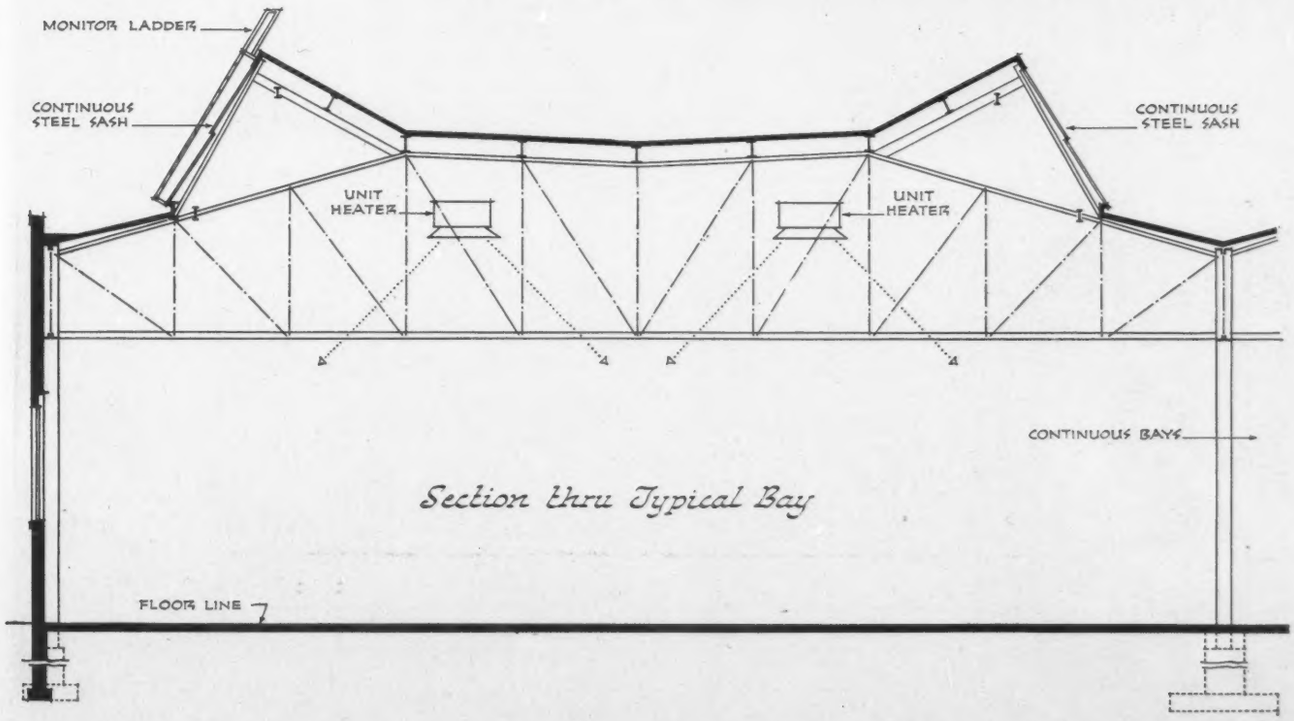


The efficient handling of the Shower-Locker Room units of the plant reflects Kahn's skill in factory planning

ASSEMBLY PLANT FOR WRIGHT AERONAUTICAL CORPORATION —

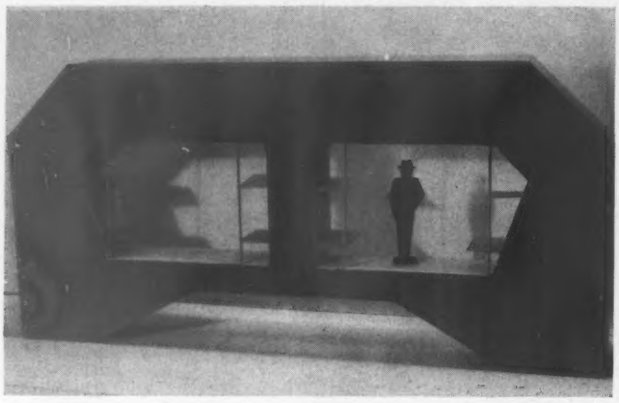


Non-glare glass was used in the factory monitors, which can be blacked-out with corrugated iron covers



Section thru Typical Bay

BY ALBERT KAHN, INC., ARCHITECTS AND ENGINEERS, DETROIT



Concrete shelter of type to withstand 500-lb. bomb

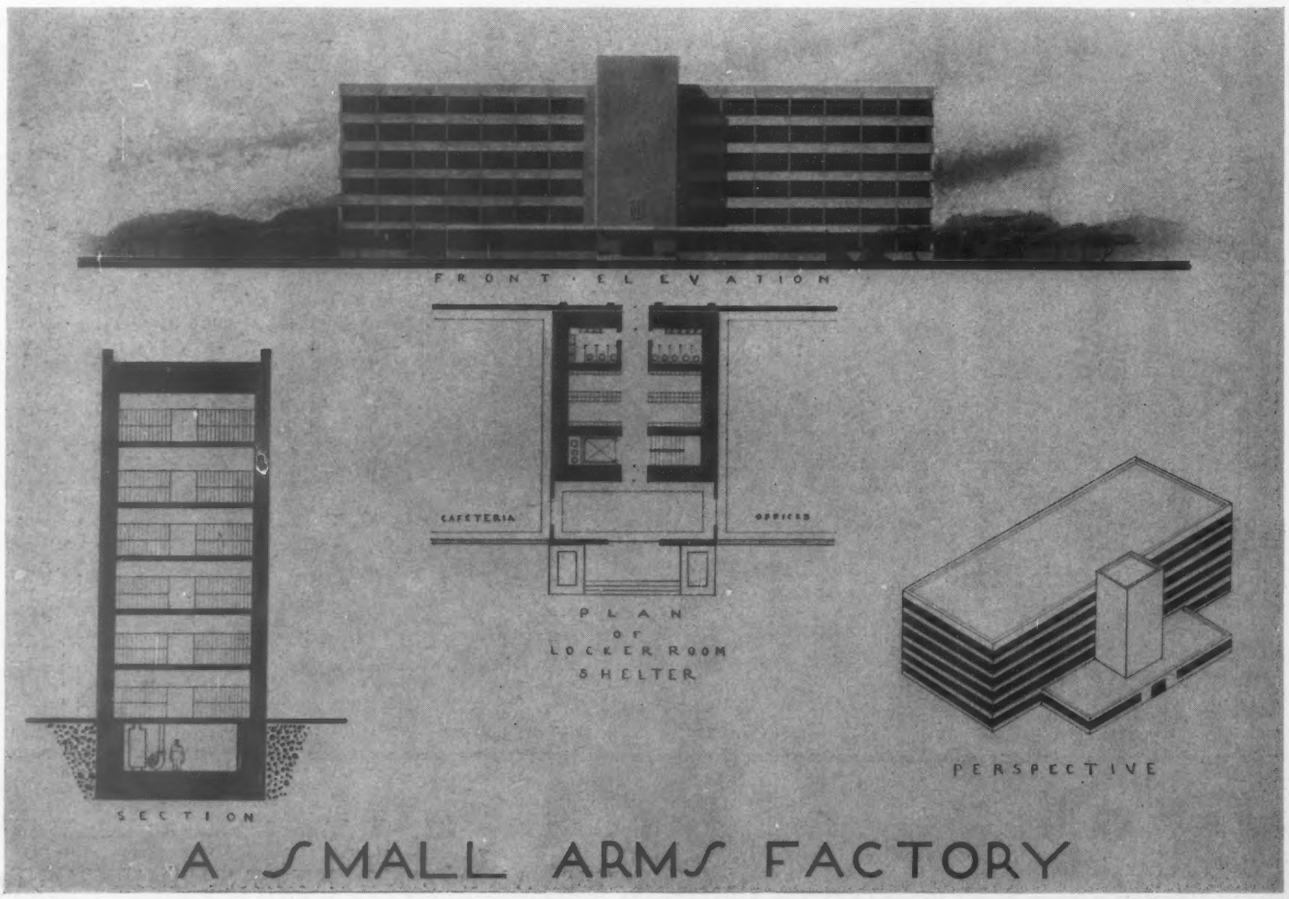
A shelter rounded to deflect delayed-action bomb

BOMBPROOF AND

PRATT INSTITUTE MAKES

Responsibility of the planning professions to originate measures for protection of the United States against aerial attack becomes increasingly apparent. The diffidence and vagueness of those who should have concerned themselves with this problem some months ago may yet have tragic consequences; but it is encouraging to find that information on protective measures *is* being disseminated actively by *educational bodies,* which have stepped to the front in this program!

The College of Engineering of New York University in cooperation with United States Office of Education, sponsored a conference in New York last month embracing a series of lectures on the technical aspects of Civilian Defense for 350 Municipal Architects and Engineers, 60 Civil Engineering teachers, and industrial technicians called from all parts of the United States. The conference was requested by Mayor LaGuardia,



SPLINTERPROOF CONSTRUCTION

SERIES OF MODELS FOR THE STUDY OF SHELTER TYPES

then National Director of the OCD, and dealt with the principles of A.R.P. but, because of the subjects discussed it was closed to the press.

Something of the timely defense program undertaken a year and a half ago by the Pratt Institute Department of Architecture, of which C. C. Briggs is Supervisor, was told here last month. The findings there of the architectural staff of 15 experts have received favorable commendation, and the Government has been sponsoring the Pratt Course in Design of Air Raid Shelters by providing funds for night classes for graduate architects. As a result of this intensive study, certain decisions have been made about shelter types.

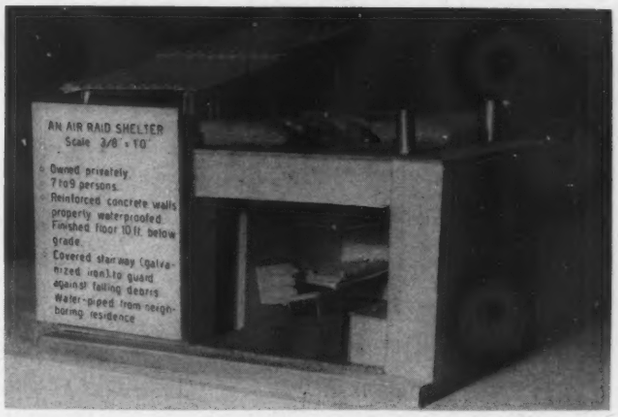
Bombproof Construction is "a much-abused term", in the opinion of the Pratt staff, which admits that it is possible to build shelters safe against a direct hit, but at such high cost that little effort has been expended even in designing such structures. Giving consideration to the relative sizes of bombs used by the enemy (500-lb. bombs were dropped in London, but many 100-lb. bombs were used at Pearl Harbor against the civilian population), it seems adequate to build against a 500-lb. bomb or less.

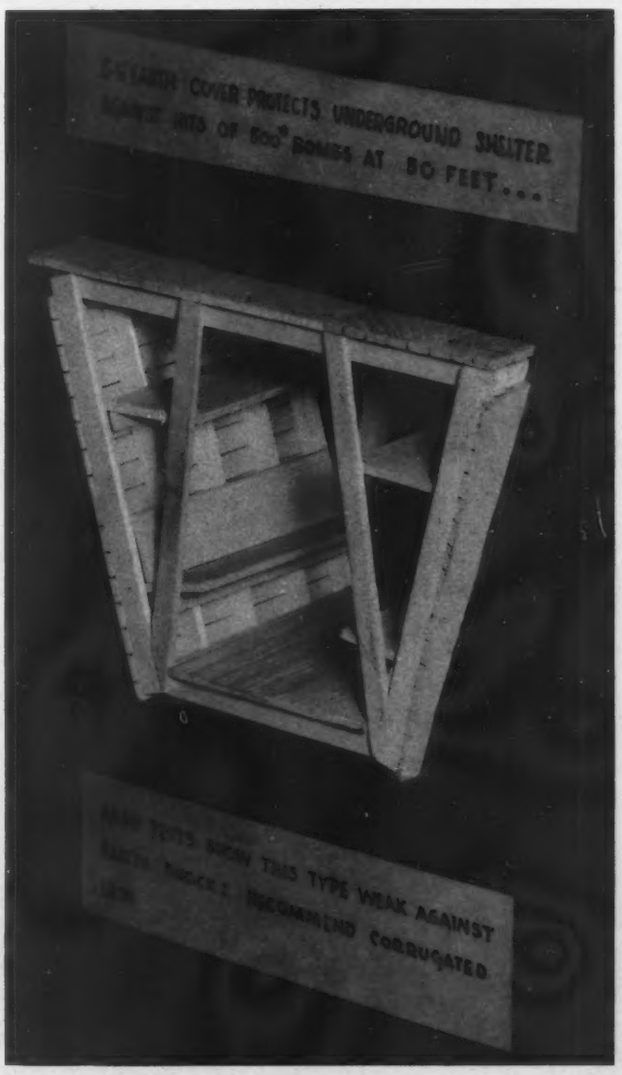
Such structures have been built and are in service in the country. The War Department has built and tested this type of shelter, with a roof 5 feet thick, and it has been proved safe (see similar section across page). Heavy reinforcement is required and the concrete should be designed for ultimate strength of 4,000 to 5,000 lbs. per square inch. The cost of such a shelter, including gas filtration units and other equipment, is about $400 per person sheltered.

An application of Bombproof Construction to normal design requirements is illustrated by the drawing across-page, also a problem in the Pratt course. The tower shelter of this factory would be used as locker space in peacetime, serving to amortize the cost of the construction which must be heavy enough so that basement walls will withstand earth shock and adjacent hits.

The classification, Splinterproof Construction, necessarily includes nearly all types of refuge we will come to know as "air raid shelters".

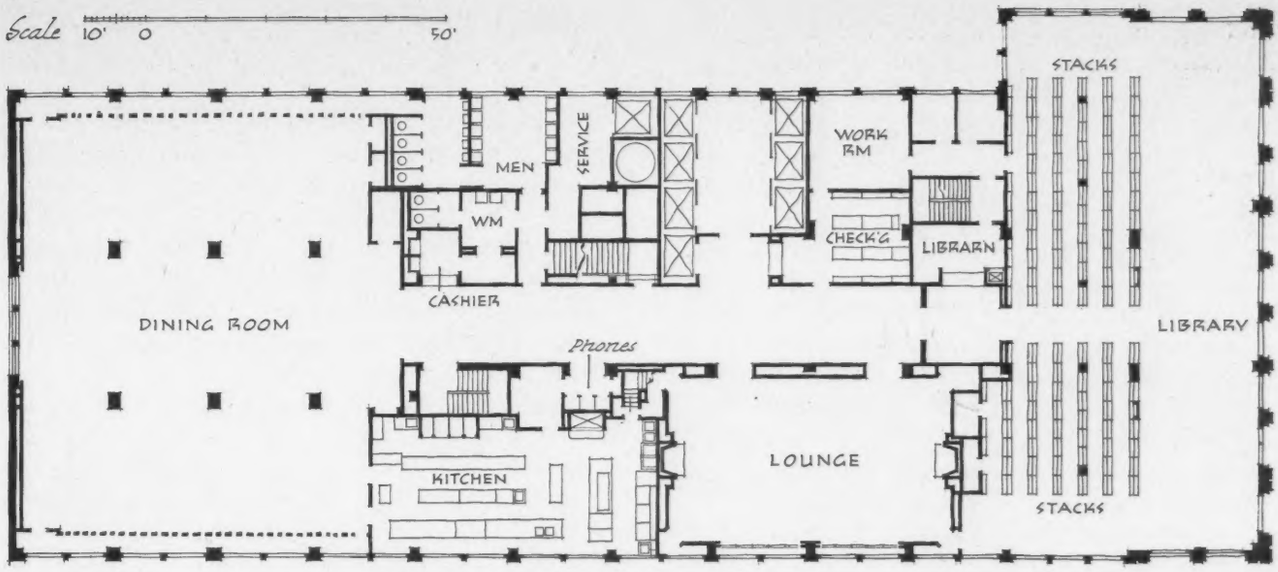
Those illustrated on this page are two low-cost shelters of the series studied in models at Pratt.


AN AIR RAID SHELTER
Scale 3/8" = 1'0"
Owned privately
7 to 9 persons
Reinforced concrete walls properly waterproofed
Finished floor 10 ft. below grade
Covered stairway (galvanized iron) to guard against falling debris
Water piped from neighboring residence


EARTH COVER PROTECTS UNDERGROUND SHELTER
AGAINST HITS OF 500 BOMBS AT 80 FEET...
THESE TYPES SHOWN THIS TYPE WEAK AGAINST
EARTH SHOCK! RECOMMEND CORRUGATED

The materials and color scheme of these rooms were calculated to give an impression of richness and dignity. The Lobby (photo above) is inviting — its brown leather and sharp green, fabric-covered chairs accenting the beige walls. The problem of the fenestration was given particular attention. As shown on the plan and in the photograph across-page, the Architect designed a system of translucent screens to mask the existing windows and diffuse light in the Dining Room. The glass in these translucent partitions is ordinary frosted glass, with the sand-blasted surface on the Dining Room side! With the exception of the Dining Room chairs, all the furniture in the rooms was designed under the Architect's supervision. (Photographs from Hedrich-Blessing, Chicago)

CHICAGO BAR ASSOCIATION ROOMS — ERNEST A. GRUNSFELD, JR.,



CHICAGO BAR ASSOCIATION

LOUNGE, DINING ROOMS, AND LIBRARY

ARCHITECT; WALLACE F. YERKES. WILLIAM E. KOENIG, ASSOCIATES

In designing new quarters for the Chicago Bar Association in an old steel frame skyscraper where the Association occupies the entire top floor (eleventh) and the attic space, the architect had to make extensive structural changes, and provide for an elaborate duct system for air-conditioning without sacrificing ceiling height in the principal rooms. The attic space, previously a maze of pipes, now is used for seven private dining rooms and for storage of books.

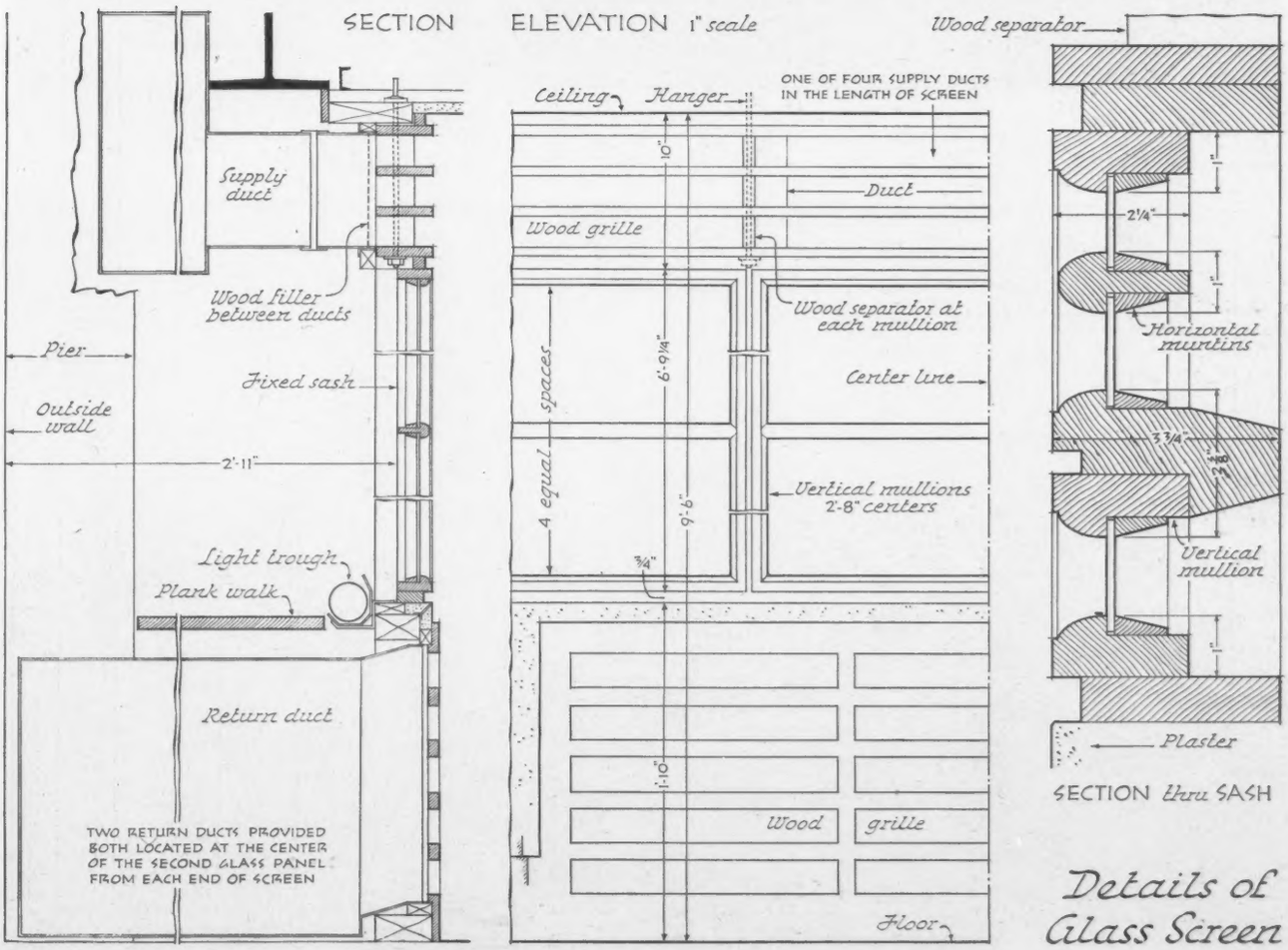
A tedious job of measuring all the pipes and making a color diagram to identify the different pipe systems had to be undertaken before actual design could be started. Ducts for the air-conditioning system were designed so that (inside elevation) they are wedge-shaped; thus, by placing one wedge atop the other a constant rectangle (in section) was provided for the combination supply and exhaust ducts. Work on the ducts had to be done within one-inch distances, since there was no room to spare without encroaching on the desired ceiling height. The ceiling heights vary from 7′-4″ to 8′-0″ clear in the dining rooms.

Structurally the biggest changes were made, as the attic floor had to be strengthened to carry not only the weight of the construction but also the tremendous loads imposed by the book storage in the attic. Steel could not be slipped under the library on the eleventh floor because reinforcing would have to extend below the ceiling line of offices below, which do not belong to the Association. It was here that the architect used the device of lessening the load on the eleventh floor by hanging some of the bookcases from the strengthened attic floor, hammock fashion.

The furniture in the Lounge (shown below) and in the Library was designed by the architect. The color scheme in the Lounge and in the Lobby (top photograph on page 138) is rather interesting. Walls are pinkish-tan, and the furniture is covered in brown leather. Some of the chairs are covered in green fabric for contrast. All exposed wood surfaces are of bleached mahogany.

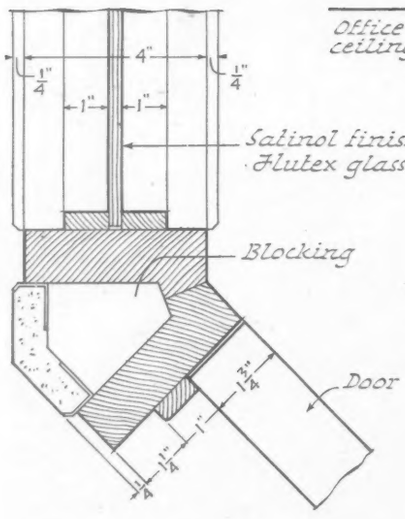
The fireplaces in the Lounge (one at each end) have lacquered brass trim and accessories. The lighting fixtures are of the same material.

CHICAGO BAR ASSOCIATION ROOMS – ERNEST A. GRUNSFELD, JR.,

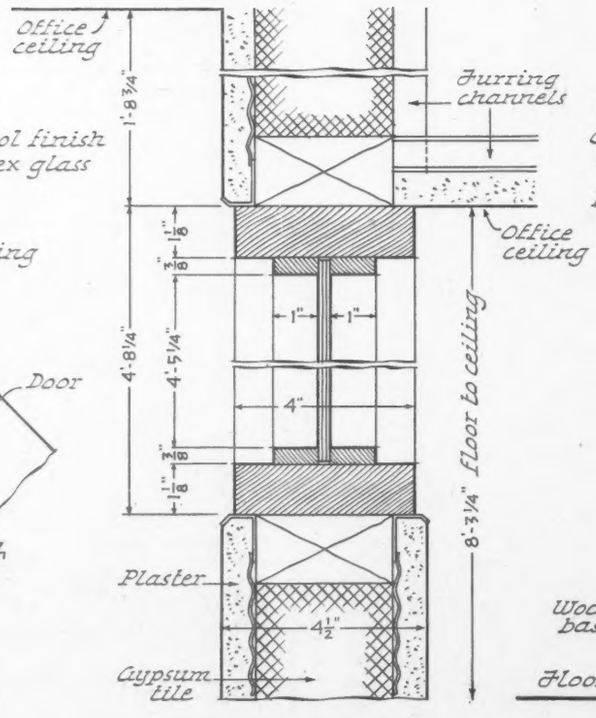


Details of Glass Screen

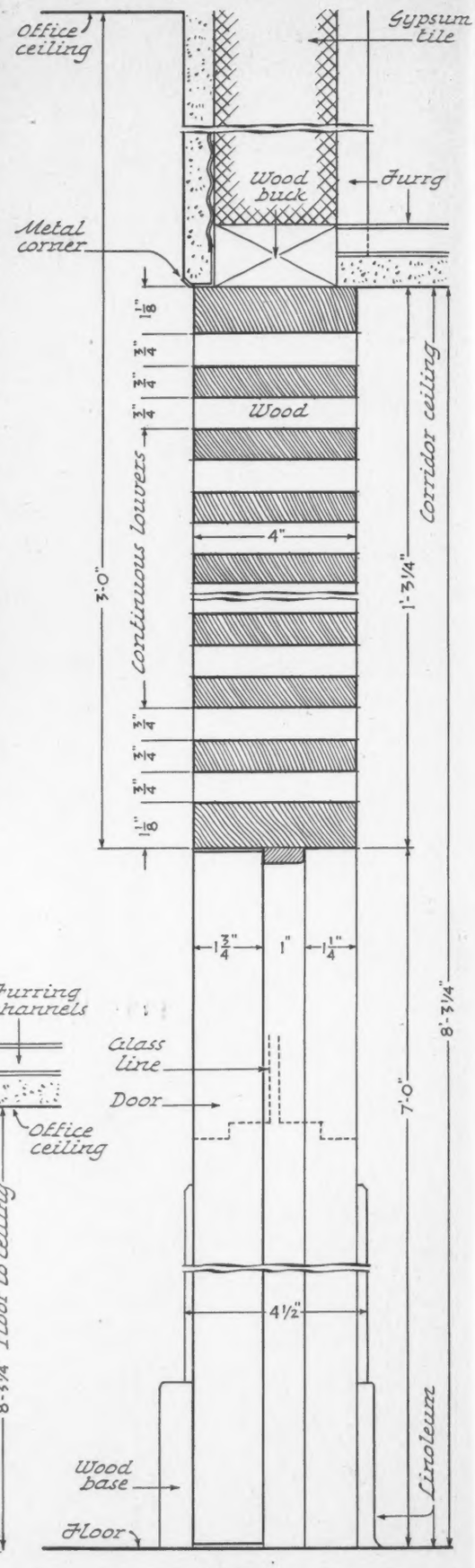
ARCHITECT; WALLACE F. YERKES, WILLIAM E. KOENIG, ASSOCIATES



PLAN AT 45° CORNER



WINDOW SECTION



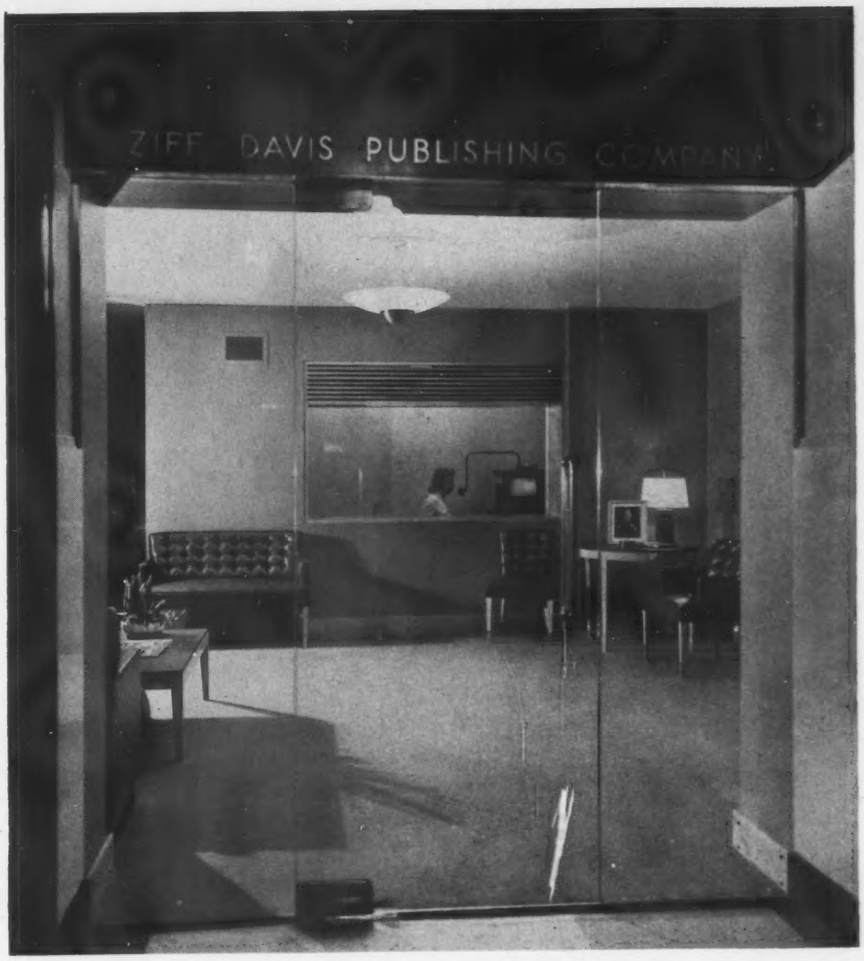
DOOR SECTION

Typical Wall Details

SCALE 3" EQUALS 1'-0"

HEADQUARTERS OF ZIFF-DAVIS PUBLISHING COMPANY, CHICAGO —

Wood, glass, and leather were used extensively and with ingenuity in the modernization of the editorial offices of Ziff-Davis Publishing Co. to economize on "hard-to-get" materials needed for the Victory Program. In the reception room (below) the photomural depicts the evolution of a magazine from copy to bound volumes. The mural adjoins the receptionist's desk (right.) Walls here are in tangerine, exactly matching the furniture. Color plays an important part throughout the offices. Blues, yellows, greens, and grays are used throughout to lessen the intensity of the sun, and in the corridor (across-page) to give the impression of greatly-increased width. The glazed partitions divide the area into twenty private offices and several large working areas. Wooden division bars and mounts support the large panels of frosted, fluted glass. (Photographs from Chicago Architectural Publishing Company)



OFFICES FOR PUBLISHERS

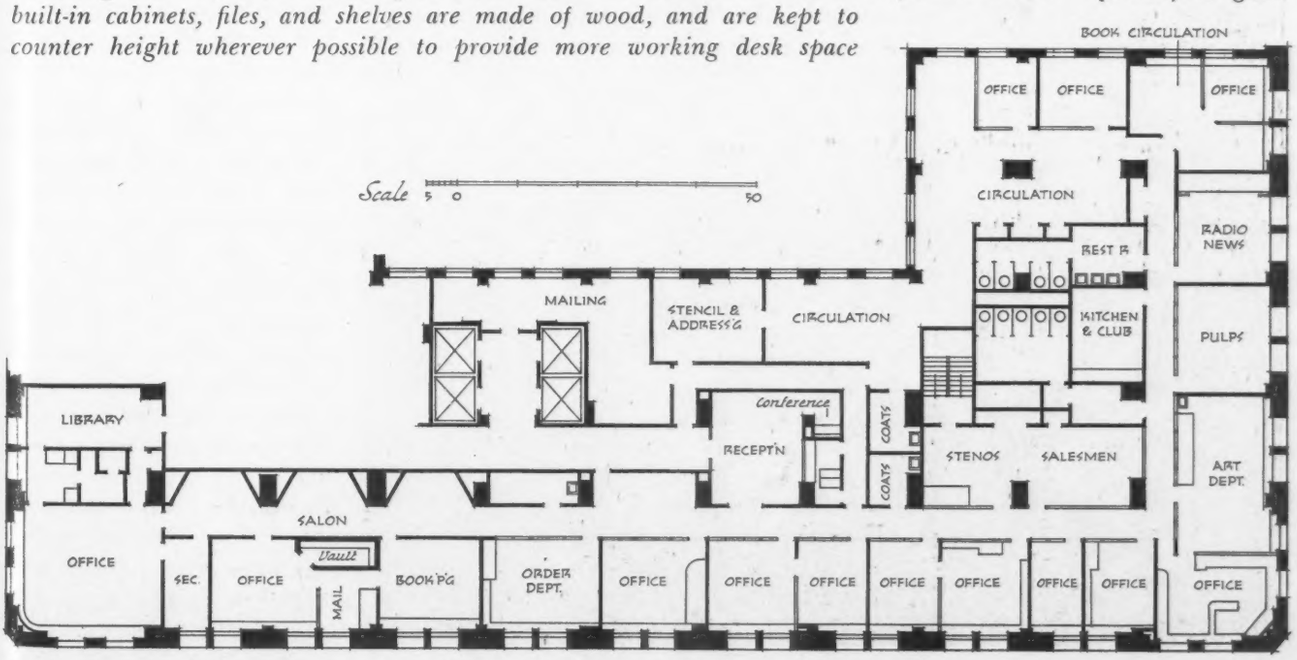
DESIGNED BY JAMES F. EPPENSTEIN, ARCHITECT, OF CHICAGO

MATERIALS AND EQUIPMENT

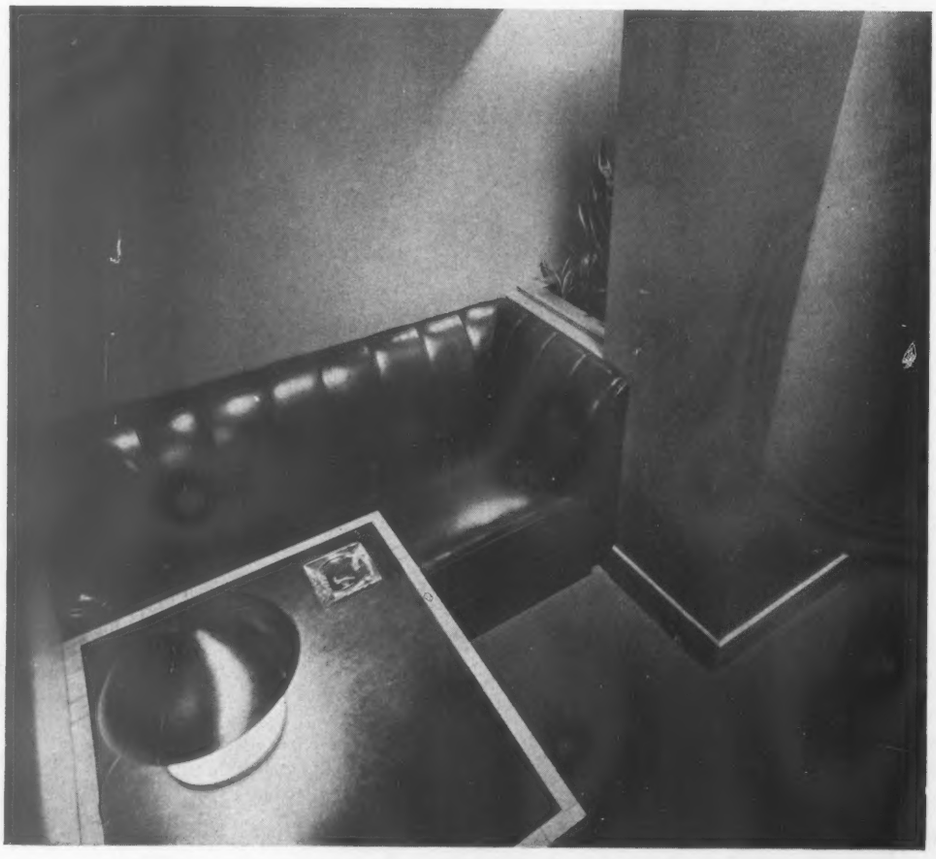
FLOORS	Rubber tile in *corridors;* Linoleum in *work spaces*; Carpeting in *main offices, reception room*
DOORS	Grid core flush panel type; entrance door of tempered plate glass
GLASS	Partitions and glazed doors of etched fluted glass
INTERIOR FINISH	*Private office* is leather paneled, with doors, trim, cabinets, furniture in natural walnut; *Salon and Reception Room* have bleached oak doors, trim, cabinets, and furniture; other areas have painted wood and plaster surfaces
SOUND TREATMENT	Acoustical tile
HEATING	Vacuum
VENTILATING	Tempered air supply and exhaust ventilation
HARDWARE	Brushed brass
LIGHTING	*Private Office* has recessed bullseye light; *Offices and Work Spaces* have direct, indirect; *Reception Room* has lamps; *Corridors* have semi-recessed fixtures: *Salons and Picture Galleries* have concealed troughs
OTHER EQUIPMENT	Venetian blinds, electric refrigerators, electric drinking fountains

HOME OFFICES OF ZIFF-DAVIS PUBLISHING COMPANY, CHICAGO —

In the private office of Publishers William B. Ziff and B. G. Davis (shown on these two pages) is a cleverly-designed set of two desks and a wall table, all arc-shaped. The three can be placed together to form a curved conference table (photograph above). The desks and the table are leather-topped in a grained cowhide matching that of the leather-upholstered walls. Woodwork is natural finish walnut. Specially-designed built-in cabinets, files, and shelves are made of wood, and are kept to counter height wherever possible to provide more working desk space



DESIGNED BY JAMES F. EPPENSTEIN, ARCHITECT, OF CHICAGO



Adjoining the reception room is a semi-private nook (photograph below) where the editors may meet visitors without disturbing their normal office routine, and where they may converse without being interrupted. Similar use is made of the three wide alcoves (see photograph above) situated outside the private offices of company executives. Furniture is of leather and bleached walnut. These alcoves, which are illuminated by concealed fluorescent lighting, are also used as a permanent photographic salon to show the winning pictures from competitions conducted by one of the firm's magazines. Pictures are changed from time to time to keep the exhibit interesting. In the alcoves, as in the publisher's office, the reception room, and elsewhere in the offices, are growing plants, here used by the architect as a permanent part of the design. In many cases the containers for the various plants were built into place

HOME OFFICES OF ZIFF-DAVIS PUBLISHING COMPANY, CHICAGO

THERE *IS* SOMETHING TO FIGHT FOR

BY TALBOT F. HAMLIN

The end of February, they say, is the bottom of the year. Certainly there are things happening to architecture right here in this country which reveal some kind of a nadir. They all have to do with the great problems of city growth (growth in form rather than in population) and the whole purpose of planning. They are random evidences of a struggle which will not down—a great struggle between planning as an economic measure to protect so-called values, and planning as a humanistic measure to improve human living conditions.

An evidence of the conflict is furnished by the recent history of the New York City Planning Commission and its definite abandonment of the entire idea of creating a master plan. At the moment I am less interested in the merits or demerits of this action than in the fact that it was taken at all and in the influences which may have affected it. The fact that it was taken would seem to indicate that there is little popular support for the planning idea—that is, for the attempt to determine future growth in the city toward the end of making city living pleasanter and richer.

The public hearings on it were miserably attended. This is a shameful fact. Certainly the architects are sufficiently implicated in such matters to make it seem desirable to have representatives from all architectural societies present with strong and forward-looking statements. The future of architecture does not lie in little individual buildings here and there, the commissions for which have been obtained by scraping and bowing and bootlicking; the future of architecture as a profession lies in bringing to bear upon community life the creative imagination which the architectural profession can offer. The quality of what can be offered—nay, even the possibility of offering anything really constructive at all—is integrally bound up with the whole concept of the purpose of planning.

In this connection it is interesting to read a *Report on the Master Plan of Land Use Proposed by the City Planning Commission* offered by the Citizens' Budget Commission last December. This report itself is a magnificent example of the most complete damning with faint praise. It gives grudging lip service to the concept of planning as a whole, and then proceeds to attack almost every single objective of any intelligent plan—for instance, decentralization and a stabilized population. But the report contains, besides the wet blankets prepared by the Budget Commission itself, two other reports presented by Ernest Goodrich and Arthur Tuttle. In these the wet blanket of the Commission becomes active and violent attack, and the attack is made on one basis only, that of property values.

Tuttle's piece is especially significant. He supports the present outrageously loose zoning ordinance of the city in its present form, not realizing how that same zoning act—through permitting overbuilding and overcrowding—has overburdened city services and itself given rise to the rapidly progressive blight that has destroyed the very values zoning was supposed to protect. Tuttle therefore recommends that the present status of zoning in New York be accepted as the master plan! As for the reason behind this extraordinary suggestion, he writes: "The studies made by the [New York City Planning] Commission in the field of planning for a better city are to be commended, provided they can be made use of without prejudicial effect upon property values in every part of the city." Here, then, is the real reason for the Citizens' Budget Commission's distrust of master planning. They know full well that any planning worth the name is bound to affect property values, because many property values on the books today are completely without human meaning. Should they carry their thinking through, it could be changed to read, perhaps: "We are willing to jeopardize the future of the city itself and the real economic future of many landholders (who will lose their land because of blight and depression) in order that a very few may here and there make a speculative profit."

Perspective of "Clinton Hill", Brooklyn—by Harrison, Fouilhoux, & Abramovitz, Architects and Engineers

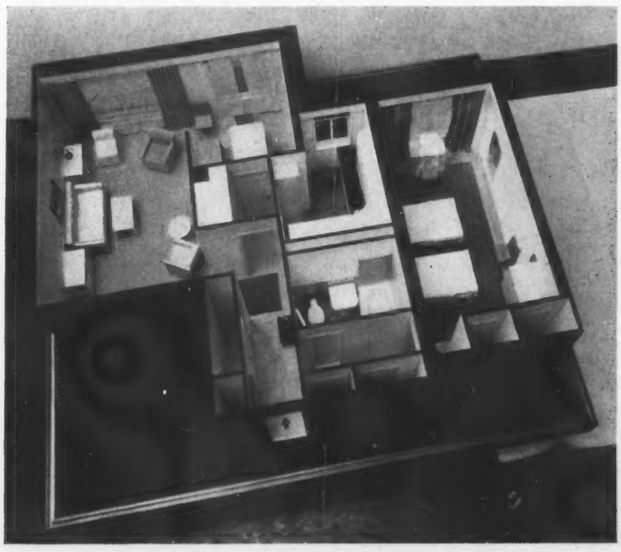
But why, in a time of war, should we even consider such idealistic matters as the purpose of city planning? Ought we not to forget the future, rush to Washington, plunge into the technical bureaucracy there, or else grab our little share of housing for war workers or industrial plant design? Perhaps, if this could be done. But the fact is that, though we may forget the future, the future will not forget us, and the future is being manufactured right now by our every thought and action. The quality of the peace that will follow the war, and the quality of human living that will go on, will be the inevitable result of the ideals currently existent in the minds of people and rulers when the peace comes. We are forging, every day, chains that will bind us and our children to certain kinds of thinking and certain kinds of living, and every choice we make inevitably welds another link. Now above *all* times is the time to see that our lip service to democratic ideals extends further than the mere idea of every man making as much money as he can while the making is good.

The problem has much more than local significance, for behind the chaos in the whole defense housing problem lies carefully hidden the same conflict. Decentralization at enormous speed is being forced upon the country by Victory needs. Short of complete catastrophe, much of this decentralization will be permanent, and many plants built for war purposes with all their concomitant housing will form permanent villages and towns. The quality of these is being created by the program of today. The small-town slum is perhaps even more deadening and disintegrating than the slum of the large city, because physical escape from it is perhaps more difficult. And not only the economic future of these Lanham Act houses is going to be important, but the quality of their design as well. We cannot allow either bad management or bad design.

Both the problem of standards and the problem of city planning are brought very much to the fore by the housing developments to be built by the Equitable Life Assurance Society in Brooklyn, the news of which has recently been released. The scheme contemplates two major groups of twelve- and fourteen-story buildings some three blocks apart on Clinton Avenue. They are situated in a part of Brooklyn that has long been a dying residential region of large, comfortable houses, some even lavish, set on large lots, so that the population concentration has been very low. Into this it is proposed to bring two groups with a population congestion fifty percent greater than that in East River Houses—an intensity of land use equaled in New York, I believe, only by London Terrace and Knickerbocker Village. Since the money is being furnished entirely by "private enterprise" (as if

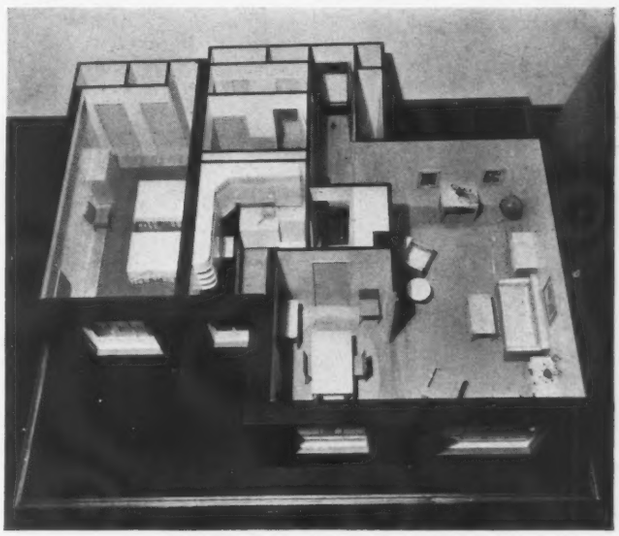
any great insurance company were actually private enterprise!) there is no opportunity for any control whatsoever by the City Planning Commission or the public housing bodies; the only controls are the manifestly ill-suited zoning ordinances applying to that part of town. The area is ill supplied with transit facilities and still more ill supplied with schools and community services of all kinds. Coming on top of Parkchester, this development makes one seriously wonder whether there is not some way in which large developments could be more organically related to city facilities.

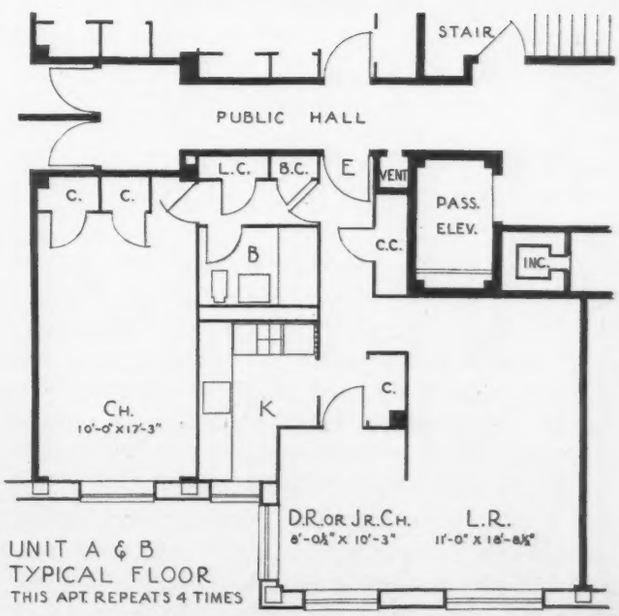
One wonders, too, why priorities were granted to this project, which is to be rented to a medium-income group, when at the same time priorities were being denied to one-half of the entire Fort Greene housing development of the New York City Housing Authority. When the news came that these priorities had been granted, the New York City Housing Authority at last obtained permission to go ahead with the whole of Fort Greene; a refusal would have seemed too absurdly inconsistent. Obviously the Equitable, like all the big insurance companies, has enormous amounts of capital to invest and must find profitable investments. Obviously, too, the net assets of the big companies are so colossal as to have, even without a desire for it, a great power in Washington. And it may be that housing investment by insurance companies is an advantageous and socially useful act. Yet this does not affect the basic question of the advisability of dumping such crowded groups of thousands of people suddenly into a part of town designed only for large, widely spaced, individual house living. What will the people do with their cars? How will they get to work and where? Where will their children go to school and how? We must remember that the median family income of the group is likely to be between $3,000 and $3,500 (at Parkchester I believe it is $3,100).



This is certainly not low-income housing, nor will many of the inhabitants of this development be industrial workers; the whole group, however, received priorities on the basis that it was defense housing and in a defense area!

The individual buildings themselves, designed by Harrison, Fouilhoux, and Abramovitz, have perhaps the most brilliant, carefully studied, and beautifully integrated unit plans that any middle-income housing development has yet achieved. The rooms are ample in size, pleasant and efficient in relationship, and taken by themselves will furnish pleasant and livable homes. And they cover but 39 percent of the net area. Granted all this, however, the basic problem of what seems a shocking over-use of land remains, and it all goes to prove that the existing zoning acts are obsolete. Perhaps in residential districts we should forget entirely heights of buildings and merely limit the number of families per acre, as the English do.





Typical unit of "Clinton Hill", Brooklyn—plan and model—developed by Harrison, Fouilhoux & Abramovitz

The 1941 Certificates of Merit for Excellence in Small House Design were awarded recently by the New York Chapter, A.I.A., in cooperation with ten other architectural societies in the metropolitan region. Awards were given for houses designed by the following architects: William F. Dominick, New York (above); Arthur H. Goddard, Bayside, Long Island (center); Harry C. Starr, New Canaan, Conn. (below)

Some time ago the Small House Committee of the New York Chapter decided that it would be a good thing to offer prizes for the best small houses in the New York neighborhood. The awards of this year have just been announced, and if these premiated houses are the best that are being produced in the small house field in the vicinity of America's largest city, certainly architecture is in a bad way. One was an incoherent jumble of meaningless out-of-scale details for a little house on a hilly site trying to be quaint and Colonial. There are more *things* on the house than should be on a residence of three times its size, and the whole is a blatant example of misapplied Colonial exhibitionism as unlike the direct simplicity of real Colonial work as anything that could be imagined. Another is a smug little number in which the attached garage seems to overwhelm the white, gambrel-roofed house. The slopes of the gambrel, the second story windows, the treatment of textures all show that kind of unpleasant attempt to be smart and different, and Colonial and in good taste at the same time, which vitiates so much suburban work. It is no better and no worse than thousands of houses put up by speculative companies the country over. The third, to me the only one that seems to show any idea whatever of what design means today, is in stone and wood not unpleasantly put together. But even of this perhaps the best that can be said is that it has no marked faults except a somewhat forced scale. I cannot but think that to stamp these three buildings with the stamp of approval of the largest chapter of the American Institute of Architects is a frightful mistake. I do not know the mechanics by which the award was made. Perhaps these were the only three buildings submitted! Certainly publication of more awards of this nature would only succeed in undoing the efforts of years to educate the public as to what real, creative architecture means. Discouraging thought: is it possible we are no better than that?

* * *

The announcement of a method of obtaining designs for the new defense housing registers one of the first victories the American Institute has had in governmental circles for a very long time.* Its importance is enormous; not only is the usefulness of architects recognized and the use of architects made the basis of the program, but the American Institute is accepted as the best agency for representing all the architects—members and non-members alike. This is an epoch-making decision. But we architects cannot rest there; we must go on aggressively to win a deserved place for the profession in all other types of construction work involving design. As yet many Washington bodies have for the architect only an arrogant disdain. There is, moreover, an *emergency* psychosis abroad that is releasing a tremendous amount of inferiority complex in non-architects in high places. The idea goes something like this: "Now, thank heaven, due to the emergency, we need no longer worry about such stupid idealisms as planning and design; we'll just build!" But the basic fact is that the question is not one of planning versus construction; the constructed buildings will be arranged and designed somehow. The question is simply and solely between good and bad planning.

** In a Federal Works Agency release dated February 1, Acting Administrator Baird Snyder, III, announced that local architects for FWA individual projects would be chosen from names suggested by the A.I.A.*

CHART NO. 1 — COMPARISON OF SIZE REGULATION AND COUNT

REGULATORY AGENCY	APPLICATION		LIVING ROOMS "A"	BEDROOMS: PRIMARY BEDROOM "B"	BEDROOMS: SECONDARY BEDROOM "C"
GROUP V Mortgage Information Bureau, Savings Banks of Brooklyn and Queens, New York	Basis for Mortgage Loans, Metropolitan N. Y. Area, for 6 & 9 story non-fireproof Multiple Dwellings	Room Count Floor Area Special Provision Sample Size	1 Room If not less than 220 sq. ft. Less not accepted 12′-0″ x 18′-4″	1 Room If not less than 180 sq. ft ½ Room if less 12′-0″ x 15′-0″	oom not less than 130 sq. if apt. has 2 baths Room otherwise 10″ x 12′-0″
The Mortgage Conference of New York	Basis for Mortgage Loans, Metropolitan N. Y. Area, for Multiple Dwellings: Rental $18-$25/Rm./Mo.	Room Count Floor Area Special Provision Sample Size	1 Room No minimum	1 Room If not less than 180 sq. ft ½ Room if less 12′-0″ x 15′-0″	oom not less than 140 sq. Room if less ″ x 12′-0″
Multiple Dwelling Law of the State of New York	Minimum Legal Standards, Class "A" Multiple Dwellings erected in New York City	Min. Floor Area Min. Dimension	Not less than 132 sq. ft. 8′-0″	Not less than 80 sq. ft. 8′-0″	Col. "B" for 3rd, 4th & 6th B.
Federal Housing Authority. Property Standards Circular No. 2	Minimum Standards for Mortgage Insurance, Title II, Sects. 207 & 210, National Housing Act — Amended 1938. For Single-Family Detached, Row, or Group Dwellings, Metropolitan New York Area	Room Count Floor Area Special Provision Sample Size	1 Room If not less than 160 sq. ft. or if combined with other units for an aggregate area of 220 sq. ft. 12′-0″ x 13′-4″	1 Room If not less than 110 sq. ft Less allowable for seasona (summer) use 9′-2″ x 12′-0″	oom not less than 70 sq. not accepted ″ x 12′-0″
Federal Housing Authority. Supplemental Standards, 1940	Minimum Standards for Mortgage Insurance under the National Housing Act for Single-Family, One-Story, Detached Dwellings, Metropolitan New York Area	Room Count Floor Area Special Provision Sample Size	1 Room If not less than min.: 140 sq. ft. If D.S. included, not less than 160 sq. ft. If D.S. & K. included, not less than 220 sq. ft. 11′-8″ x 12′-0″	1 Room If not less than 100 sq. ft Less not accepted 8′-4″ x 12′-0″	oom not less than 70 sq. not accepted ″ x 12′-0″
Federal Housing Authority. Rental Housing Division	Minimum Standards for Mortgage Insurance, Section 207, National Housing Act, for Multiple Dwelling Rehab., Rental Housing, Metropolitan New York Area	Room Count Floor Area Special Provision Sample Size	1 Room If not less than 160 sq. ft. Less not accepted 12′-0″ x 13′-4″	1 Room If not less than 110 sq. ft Less not accepted 9′-2″ x 12′-0″	oom not less than 80 sq. not accepted x 12′-0″

United States Housing Authority (FWA)	Minimum and Maximum Standards for Projects Developed under the terms of the United States Housing Act of 1937 as amended	Room Count	No. of B.R.'s	Min. — Max.	Min. — Max.	Min. — Max.
		2½	1	150 — 180 sq. ft.	120 — 130 sq. ft.	None
		3	1	160 — 180 sq. ft.	120 — 130 sq. ft.	None
		4	2	160 — 200 sq. ft.	120 — 130 sq. ft.	100 — 110 sq. ft.
		4½	2	160 — 200 sq. ft.	120 — 130 sq. ft.	100 — 110 sq. ft.
		5½	3	160 — 210 sq. ft.	120 — 130 sq. ft.	100 — 110 sq. ft.
		6½	4	160 — 220 sq. ft.	120 — 130 sq. ft.	100 — 110 sq. ft.
		7½	5	160 — 220 sq. ft.	120 — 135 sq. ft.	100 — 115 sq. ft.
		8½	6	170 — 220 sq. ft.	120 — 135 sq. ft.	100 — 115 sq. ft.

CHART NO. 2 — COMPARISON OF SIZE REGULATION AND COUNT

REGULATORY AGENCY	APPLICATION	OCCUPANCY	LIVING ROOM	COMBINATION LIVING AND COOKING	COMBINAT COOKIN	IVING-ING	PRIM
NEW YORK CITY HOUSING AUTHORITY	MINIMUM STANDARDS FOR SLUM CLEARANCE PROJECTS IN NEW YORK CITY	1 Person	150 sq. ft.	None	None		
		2 Persons	None	165 sq. ft.	None		
		3 Persons	None	180 sq. ft.	None		
		4 Persons	None	None	255		
		4 Persons	None	None	255		
		5 Persons	150 sq. ft.	None	None		
		6 Persons	150 sq. ft.	None	None		
		6 Persons	150 sq. ft.	None	None		
		7 Persons	160 sq. ft.	None	None		

REGULATORY AGENCY	APPLICATION	OCCUPANCY Min.	OCCUPANCY Max.	ROOM COUNT	GROSS FLOOR AREA	LIVIN M	PRIM
NEW YORK STATE DIVISION OF HOUSING	MINIMUM STANDARDS FOR SLUM CLEARANCE PROJECTS IN NEW YORK STATE	1 Person	1 Person	1	210 sq. ft.	Entire Dw	Unit Sle
		2 Persons	2 Persons	2	300 sq. ft.	Yes: No M	Max. Sle
		2 Persons	2 Persons	2	370 sq. ft.	Yes: 250	
		2 Persons	3 Persons	3	450 sq. ft.	Yes: No M	Max.
		3 Persons	3 Persons	3 or 4	480 sq. ft.	Yes: No M	Max.
		3 Persons	4 Persons	4	600 sq. ft.	Yes: No M	Max. 2 @
		4 Persons	4 Persons	5	660 sq. ft.	Yes: No M	Max.
		5 Persons	5 Persons	5	750 sq. ft.	Yes: No M	Max. 2 @
		5 Persons	6 Persons	5	800 sq. ft.	Yes: No M	Max. 3 @
		6 Persons	7 Persons	6	900 sq. ft.	Yes: No M	Max. 3 @
		7 Persons	8 Persons	7	1100 sq. ft.	Yes: No M	Max. 3 @

EDITOR'S NOTE—These charts were prepared by Albert Homer Swanke before the move to consolidate housing agencies under John B. Blandford, Jr. We hop many of the above-menti

CHART NO. 1 — COMPARISON OF SIZE REGULATION

REGULATORY AGENCY	APPLICATION		LIVING ROOMS "A"	BED PRIMARY BEDROOM "B"
GROUP V Mortgage Information Bureau, Savings Banks of Brooklyn and Queens, New York	Basis for Mortgage Loans, Metropolitan N. Y. Area, for 6 & 9 story non-fireproof Multiple Dwellings	Room Count Floor Area Special Provision Sample Size	1 Room If not less than 220 sq. ft. Less not accepted 12′-0″ x 18′-4″	1 Room If not less than 180 sq. ft ½ Room if less 12′-0″ x 15′-0″
The Mortgage Conference of New York	Basis for Mortgage Loans, Metropolitan N. Y. Area, for Multiple Dwellings: Rental $18-$25/Rm./Mo.	Room Count Floor Area Special Provision Sample Size	1 Room No minimum	1 Room If not less than 180 sq. ft ½ Room if less 12′-0″ x 15′-0″
Multiple Dwelling Law of the State of New York	Minimum Legal Standards, Class "A" Multiple Dwellings erected in New York City	Min. Floor Area Min. Dimension	Not less than 132 sq. ft. 8′-0″	Not less than 80 sq. ft. 8′-0″
Federal Housing Authority. Property Standards Circular No. 2	Minimum Standards for Mortgage Insurance, Title II, Sects. 207 & 210, National Housing Act — Amended 1938. For Single-Family Detached, Row, or Group Dwellings, Metropolitan New York Area	Room Count Floor Area Special Provision Sample Size	1 Room If not less than 160 sq. ft. or if combined with other units for an aggregate area of 220 sq. ft. 12′-0″ x 13′-4″	1 Room If not less than 110 sq. ft Less allowable for seasona (summer) use 9′-2″ x 12′-0″
Federal Housing Authority. Supplemental Standards, 1940	Minimum Standards for Mortgage Insurance under the National Housing Act for Single-Family, One-Story, Detached Dwellings, Metropolitan New York Area	Room Count Floor Area Special Provision Sample Size	1 Room If not less than min.: 140 sq. ft. If D.S. included, not less than 160 sq. ft. If D.S. & K. included, not less than 220 sq. ft. 11′-8″ x 12′-0″	1 Room If not less than 100 sq. ft Less not accepted 8′-4″ x 12′-0″
Federal Housing Authority. Rental Housing Division	Minimum Standards for Mortgage Insurance, Section 207, National Housing Act, for Multiple Dwelling Rehab., Rental Housing, Metropolitan New York Area	Room Count Floor Area Special Provision Sample Size	1 Room If not less than 160 sq. ft. Less not accepted 12′-0″ x 13′-4″	1 Room If not less than 110 sq. ft Less not accepted 9′-2″ x 12′-0″
United States Housing Authority (FWA)	Minimum and Maximum Standards for Projects Developed under the terms of the United States Housing Act of 1937 as amended	Room Count / No. of B.R.'s	Min. — Max.	Min. — Max.
		2½ / 1	150 — 180 sq. ft.	120 — 130 sq. ft.
		3 / 1	160 — 180 sq. ft.	120 — 130 sq. ft.
		4 / 2	160 — 200 sq. ft.	120 — 130 sq. ft.
		4½ / 2	160 — 200 sq. ft.	120 — 130 sq. ft.
		5½ / 3	160 — 210 sq. ft.	120 — 130 sq. ft.
		6½ / 4	160 — 220 sq. ft.	120 — 130 sq. ft.
		7½ / 5	160 — 220 sq. ft.	120 — 135 sq. ft.
		8½ / 6	170 — 220 sq. ft.	120 — 135 sq. ft.

CHART NO. 2 — COMPARISON OF SIZE REGULATION

REGULATORY AGENCY	APPLICATION	OCCUPANCY	LIVING ROOM	COMBINATION LIVING AND COOKING	COMBINATI COOKIN
NEW YORK CITY HOUSING AUTHORITY	MINIMUM STANDARDS FOR SLUM CLEARANCE PROJECTS IN NEW YORK CITY	1 Person	150 sq. ft.	None	None
		2 Persons	None	165 sq. ft.	None
		3 Persons	None	180 sq. ft.	None
		4 Persons	None	None	255
		4 Persons	None	None	255
		5 Persons	150 sq. ft.	None	None
		6 Persons	150 sq. ft.	None	None
		6 Persons	150 sq. ft.	None	None
		7 Persons	160 sq. ft.	None	None

REGULATORY AGENCY	APPLICATION	OCCUPANCY Min.	OCCUPANCY Max.	ROOM COUNT	GROSS FLOOR AREA	LIVING
NEW YORK STATE DIVISION OF HOUSING	MINIMUM STANDARDS FOR SLUM CLEARANCE PROJECTS IN NEW YORK STATE	1 Person	1 Person	1	210 sq. ft.	Entire Dw
		2 Persons	2 Persons	2	300 sq. ft.	Yes: No M
		2 Persons	2 Persons	2	370 sq. ft.	Yes: 250
		2 Persons	3 Persons	3	450 sq. ft.	Yes: No M
		3 Persons	3 Persons	3 or 4	480 sq. ft.	Yes: No M
		3 Persons	4 Persons	4	600 sq. ft.	Yes: No M
		4 Persons	4 Persons	5	660 sq. ft.	Yes: No M
		5 Persons	5 Persons	5	750 sq. ft.	Yes: No M
		5 Persons	6 Persons	5	800 sq. ft.	Yes: No M
		6 Persons	7 Persons	6	900 sq. ft.	Yes: No M
		7 Persons	8 Persons	7	1100 sq. ft.	Yes: No M

EDITOR'S NOTE—These charts were prepared by Albert Homer Swanke before the move to consolidate housing agencies under John B. Blandford, Jr. We ho

TION AND COUNT VALUES FOR ROOMS IN DWELLINGS

BEDROOMS	KITCHENS		DINING ROOMS	MAIDS' ROOMS
OOM	CONDARY BEDROOMS "C"	COOKING ONLY "D"	WITH DINING SPACE "E"	"F"	"G"
sq. ft	oom not less than 130 sq. ft. if apt. has 2 baths Room otherwise 10" x 12'-0"	1 Room If not less than 70 sq. ft. ½ Room if less 5'-10" x 12'-0"	1½ Rooms If not less than 140 sq. ft. + sep. window for D.S. 1 Room otherwise 11'-8" x 12'-0"	1 Room If not less than 130 sq. ft. ½ Room if less 10'-10" x 12'-0"	See Col. "C" No specific requirement
sq. ft	oom not less than 140 sq. ft. Room if less 5" x 12'-0"	1 Room If not less than 90 sq. ft. + full D.R. in apt. ½ Room otherwise 7'-6" x 12'-0"	1 Room If not less than 90 sq. ft. ½ Room if less 7'-6" x 12'-0"	1 Room If not less than 140 sq. ft. ½ Room if less 11'-8" x 12'-0"	1 Room If with private bath ½ Room otherwise No minimum
t.	Col. "B" for 3rd, 4th & 6th B.R.'s	Not less than 49 sq. ft. No minimum	See Col. "D" Plus Alcove not more than 55 sq. ft.	Not less than 70 sq. ft. Designated Dining Alcove 7'-0"	Not less than 80 sq. ft. See Col. "C"
sq. ft easona	oom not less than 70 sq. ft. not accepted 0" x 12'-0"	1 Room If not less than 60 sq. ft. 49 sq. ft. acceptable in multiple dwellings 5'-0" x 12'-0"	Dinettes — sub-divided from Kit. may extend not more than 22'-0" long (inc. Kit.) at right angles to required window	1 Room If not less than 70 sq. ft. Less not accepted 5'-10" x 12'-0"	See Col. "C" No specific requirement No specific requirement
sq. ft	oom not less than 70 sq. ft. not accepted " x 12'-0"	1 Room If not less than 60 sq. ft. Less not accepted 5'-0" x 12'-0"	1 Room If not less than 85 sq. ft. Less = Col. "D" 7'-1" x 12'-0"	1 Room If not less than 70 sq. ft. Less not accepted 5'-10" x 12'-0"	See Col. "C" No specific requirement No specific requirement
sq. ft	oom not less than 80 sq. ft. not accepted x 12'-0"	1 Room If not less than 60 sq. ft. ½ Room if less 5'-0" x 12'-0"	1 Room If not less than 60 sq. ft. ½ Room if less 5'-0" x 12'-0"	1 Room If not less than 110 sq. ft. ½ Rm. if less = Din. Alc. 9'-2" x 12'-0"	See Col. "C" No specific requirement No specific requirement

	Min. — Max.	Min. — Max.	Aggregate Area of L.R. & Kit. Min. — Max.
ft.	None	Space for ckg. eqpt. in L.R.	210 — 250 sq. ft.
ft.	None	50 — 100 sq. ft.	240 — 280 sq. ft.
ft.	100 — 110 sq. ft.	50 — 110 sq. ft.	260 — 280 sq. ft.
ft.	100 — 110 sq. ft.	50 — 110 sq. ft.	270 — 290 sq. ft.
ft.	100 — 110 sq. ft.	70 — 120 sq. ft.	280 — 300 sq. ft.
ft.	100 — 115 sq. ft.	80 — 130 sq. ft.	300 — 330 sq. ft.
ft.	100 — 115 sq. ft.	110 — 140 sq. ft.	310 — 340 sq. ft.
		110 — 150 sq. ft.	

NOTES: (On T. I. N. Bull. No. 20)
Dining space incorp. in L. R. & Kit.
Aggregate net area of L. R. & Kit. not less than 260 sq. ft. counts as 2½ rooms.
All B. R. sizes indicated are for 2 person occupancy—B. R.'s for single person occupancy should range 65 sq. ft.-80 sq. ft., with minimum dimension of 7'-0"
Aggregate net area of L. R. & Kit. of 240 sq. ft.-280 sq. ft. counts as 2 rooms.
Formulae flexible to exigencies of plan and local authorities.

TION AND COUNT VALUES FOR ROOMS IN DWELLINGS

INATI OKINC	IVING-ING	PRIMARY BEDROOM	SECONDARY BEDROOM	TERTIARY BEDROOM	KITCHEN
None		None	None	None	Kitchenette off L.R.
None		120 sq. ft.	None	None	None
None		120 sq. ft.	80 sq. ft.	None	None
255		120 sq. ft.	110 sq. ft.	None	None
255		120 sq. ft.	80 sq. ft.	80 sq. ft.	None
None		120 sq. ft.	110 sq. ft.	80 sq. ft.	120 sq. ft.
None		120 sq. ft.	110 sq. ft.	110 sq. ft.	130 sq. ft.
None		140 sq. ft.	120 sq. ft.	80 sq. ft.	130 sq. ft.
None		120 sq. ft.	2 @ 110 sq. ft.	80 sq. ft.	135 sq. ft.

LIVINOM		PRIMARY BEDROOM (2 Persons)	SECONDARY BEDROOM (1 Person)	DINING ROOM	KITCHEN
re Dw	Unit	Sleeping in L.R.	None	Dining in L.R.	Cooking in L.R.
No M	Max.	Sleeping in L.R.	None	Dining in L.R. or Kit.	Yes: No Min. or Max.
250		120 sq. ft.	None	Dining in L.R.	Cooking in L.R.
No M	Max.	120 sq. ft.	None	Dining in L.R. or Kit.	Yes: No Min. or Max.
No M	Max.	120 sq. ft.	80 sq. ft.	Dining in L.R. or Kit.	Optional: No Min. or Max.
No M	Max.	2 @ 120 sq. ft.	None	Dining in L.R. or Kit.	Yes: No Min. or Max.
No M	Max.	120 sq. ft.	2 @ 80 sq. ft.	Dining in L.R. or Kit.	Yes: No Min. or Max.
No M	Max.	2 @ 120 sq. ft.	80 sq. ft.	Dining in L.R. or Kit.	Yes: No Min. or Max.
No M	Max.	3 @ 120 sq. ft.	None	Dining in L.R. or Kit.	Yes: No Min. or Max.
No M	Max.	3 @ 120 sq. ft.	80 sq. ft.	Dining in L.R. or Kit.	Yes: No Min. or Max.
No M	Max.	3 @ 120 sq. ft.	2 @ 80 sq. ft.	Dining in L.R. or Kit.	Yes: No Min. or Max.

We ho many of the above-mentioned discrepancies will be eliminated by the coordination of the housing program under The National Housing Agency.

WELL—HOW BIG *IS* A ROOM?

BY ALBERT HOMER SWANKE

The accompanying compilation of the requirements of various regulatory agencies concerned with housing is presented as an objective study of the thought given apportionment of space in dwelling units, as well as for design use. By comparison of the requirements of the agencies included, the accepted average for the various types of housing can be seen at a glance. The specific requirements of the various agencies are condensed for quick reference, and the basis for solutions which would qualify under any allied group of requirements is indicated.

The requirements of the Group V Mortgage Information Bureau, and of the Mortgage Conference, formulated in an effort to stabilize the basis for loans placed by member institutions, are concerned with privately financed, constructed, and operated apartment projects. Although the desirable minima for room sizes are established and a definite room-count value assigned such sizes, the apportionment of space, the occupancy, and the relationship between the various elements of the rental unit are at the discretion of the operator and the prospective mortgagee. Foyers, baths, dressing rooms, open or enclosed porches, and cooking recesses, kitchenettes, or interior cooking compartments are not given credit in the room-count. Dining rooms, to be rated as rooms, must be separated from the cooking facilities by full partitions.

The Multiple Dwelling Law defines the minimum legal standards for rooms in Multiple Dwellings in New York City, and those standards are included because of the influence they have exerted on design during the past ten years. An outgrowth of the Tenement House Law of 1901 and its subsequent revisions to 1929, the Multiple Dwelling Law was evolved from study of and experience with the largest apartment-dwelling area in the country, New York City, and its standards represent the absolute minima desirable. Among its provisions are the requirements that windows be of at least an area equal to 10% of the floor area of the rooms, that ceiling heights be not less than 8′-0″, and that rooms may not be subdivided in any manner so that areas less than 70 square feet in size or without a window are created. Baths, foyers, and kitchens of floor area less than 49 square feet are excluded from the room-count.

The requirements of the Federal Housing Administration are similar in form to those of the agencies concerned with fully private operations. It is required in single-family one-story detached, single-family detached, row, or group dwellings, that all habitable rooms be lighted by windows not less in size than 10% of the floor area of the room and ventilated to the extent of openable fenestration not less than 4% of the floor area of the room; that basements containing habitable rooms shall not be more than 30″ below the average grade; and that baths be accessible without passing through a sleeping room or a cooking space. Ceiling heights must not be less than 7′-6″ in all habitable rooms: in single-family detached, row, or group houses, this minimum must be increased to 8′-0″ on the first floor. For single-family one-story detached dwellings the space requirements are based on the provision of areas for Living-Dining-Cooking, Sleeping, and for a bathroom, with flexibility possible as indicated by the chart. For single-family detached, row, or group houses, the dwelling unit must consist of not less than three habitable rooms and one bathroom: Living Room, Bed Room, Kitchen and Bath. Further requirements include the provision of one closet for each bed room, and for not less than 30 square feet of general storage space.

The United States Housing Authority, necessarily concerned with the absolute minima desirable in space apportionment, controls room sizes and areas by a system based on the number of sleeping rooms, and thus, indirectly, on the number of occupants in the dwelling unit, with the Living, Dining, and Cooking areas in proportion to the number of occupants as indicated by the bed rooms provided.

The control of the New York City Housing Authority is based on the number of persons housed in each dwelling unit, and similarly to the United States Housing Authority, has devised a relationship between Living, Dining, and Cooking areas that is dependent on the number of persons housed. The Authority has developed its requirements to the point of indicating the most desirable basic room sequence and arrangement, and requires free access to all rooms and toilets without passing through any sleeping room. Control of areas is further had by the requirement that the drawings indicate the placement of the furniture necessary to the occupancy proposed. One bathroom is acceptable for an occupancy of seven persons, and a toilet compartment is acceptable in units for single-person occupancy wherever public bathing facilities are available. Further requirements include the provision of no less than 3 square feet for general storage, 7 or 8 square feet for perambulator storage, approximately 3 square feet for the storage of wheel toys, and special and craft room space of approximately 15 or 16 square feet, for each dwelling unit. A coat closet and a linen closet are required for each dwelling unit of more than three rooms, and a clothes closet is required for each bed room.

The requirements of the New York State Division are similar to those of the New York City Housing Authority with only minor differences. The State Division defines a dwelling unit as having at least a private toilet and bathing facilities, one private bed room, one living room, cooking facilities, and one coat closet, one linen closet, and one closet for each bed room. The minimum total square feet a dwelling unit, or gross floor area, is defined as the total area within but not including the enclosing walls or partitions.

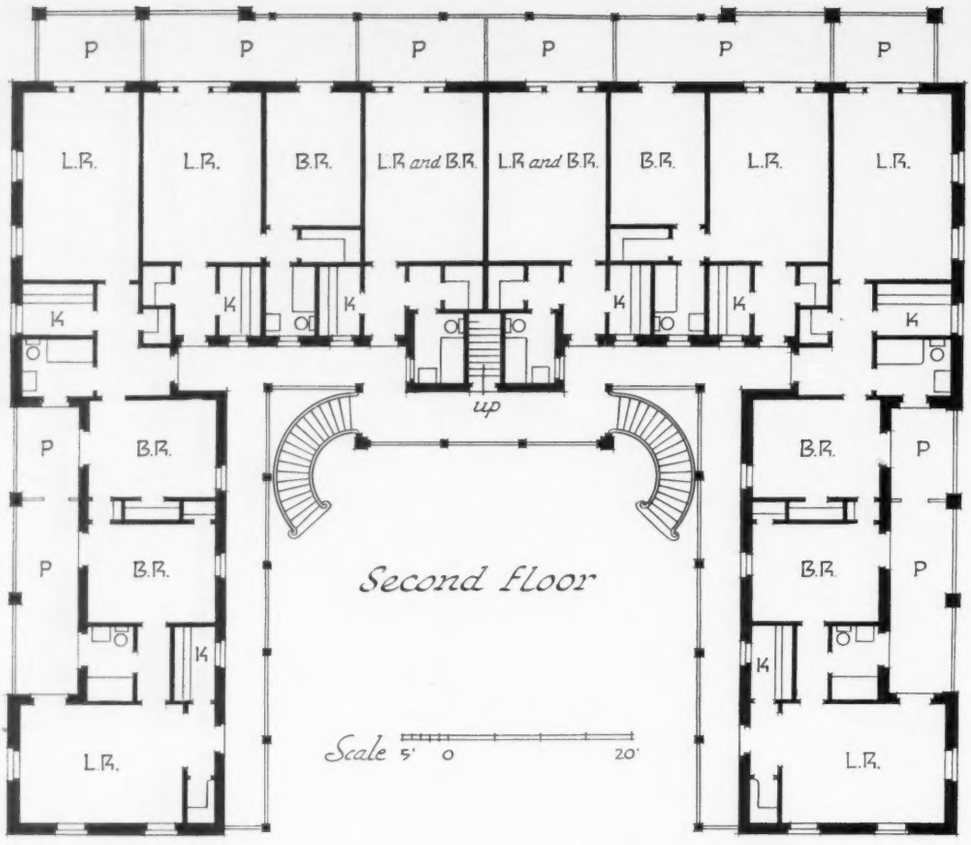
APARTMENTS IN NASSAU, B. W. I.

DESIGNED BY BRADLEY DELEHANTY, ARCHITECT, NEW YORK

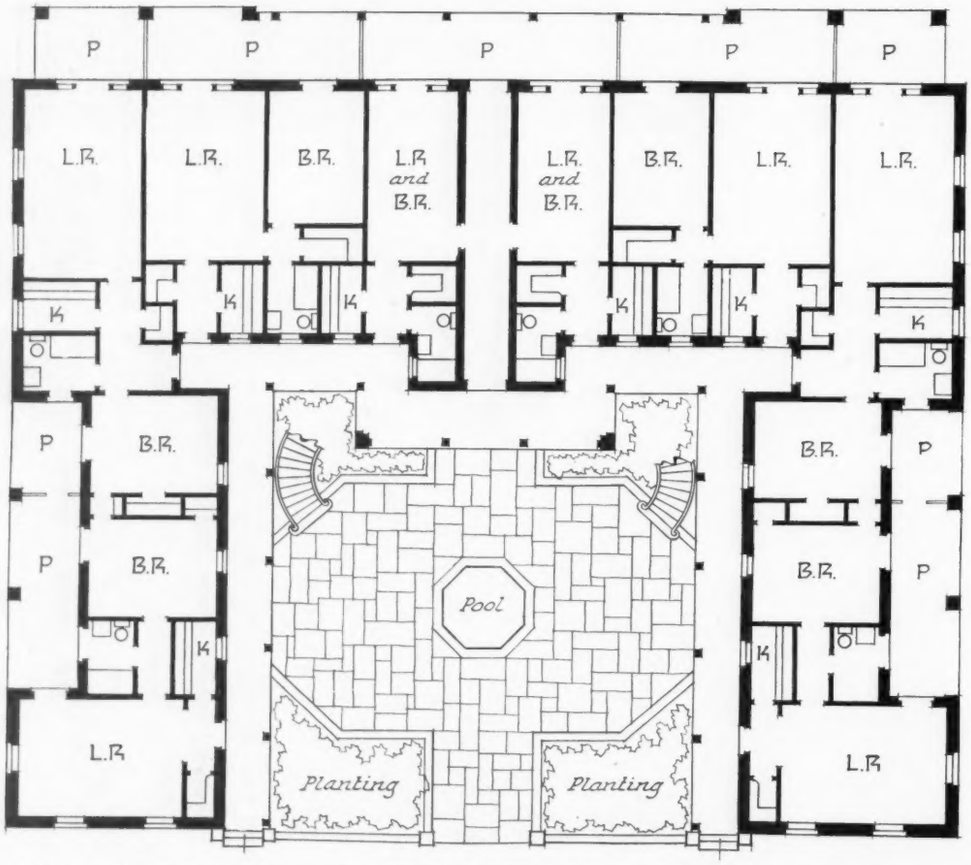
The design of the Cable Beach Apartments for a waterfront site at Nassau, B.W.I., embodies many features that contribute to comfortable living in a warm climate. The sixteen apartments (see plan on page 154) consist of one-, two-, and three-room units, ingeniously planned to permit flexibility in the number of rooms rented together. The building is constructed around a patio, abundant with tropical foliage. Though contemporary in design and detail, the building harmonizes with British Colonial architecture of the Islands.

The exterior stucco walls are pale flesh pink, with the quoins, belt course, water table, and keystones painted white. The stucco walls of the covered porches (which provide secondary light in the living rooms) are painted a soft tropical blue, and the wooden awnings, porch railings, and balusters are painted a light blue warm grey. Each suite has a private porch overlooking the sea.

Living room furniture is made of bamboo, with upholstered cushions varying in color schemes for each apartment. Bedroom furniture and auxiliary pieces have a natural oak finish. (Photographs were made by F. S. Lincoln, of New York.)



First floor



CABLE BEACH APARTMENTS, NASSAU, BRITISH WEST INDIES –

MATERIALS AND EQUIPMENT

Foundation Walls	12″ concrete to grade
Terraces	Local split flagstone laid in cement
Wall Construction	Waterproof stucco, backed with local hollow cinder blocks
Floor Construction	*First floor*—tile laid over 5″ concrete; *second floor*—wood joists of Southern yellow pine
Roof	Wood shingles weathered a natural silver gray
Sheet Metal	Copper
Windows	Wood sash and frames (local mill—architect's details)
Floor Finish	White oak *second floor*
Interior Walls	Plastered and floated in accordance with local practice, and sand finish painted
Plumbing	Cast iron and brass pipes; vitreous china Bathroom and Kitchenette equipment
Hardware	Brass; chrome for *Kitchen* and *Bath*
Electrical	Rigid conduit
Ceilings	Pecky cypress
Other Equipment	Electric ranges, mechanical refrigeration, etc.

DESIGNED BY BRADLEY DELEHANTY, ARCHITECT, NEW YORK

ADOLPH DICK RESIDENCE — ROBERT LAW WEED, ARCHITECT

A BACHELOR'S HOUSE IN MIAMI BEACH

Practical information about special problems involved in planning living spaces and shelter in tropical and semi-tropical areas, gathered over a space of twenty years, has served Robert Law Weed well, and is reflected in the design of this house for Adolph Dick. Weed was a pioneer in the use of several materials now widely accepted in Florida, especially white tile roofs, popular on the lower East Coast. In developing this type of roof he first experimented with painted clay tile, then white cement tile made especially for the job, and finally a clay tile with a white baked-on slip (see application in photograph below). The insulating value of white against a tropical sun is ideally adapted to the Florida climate.

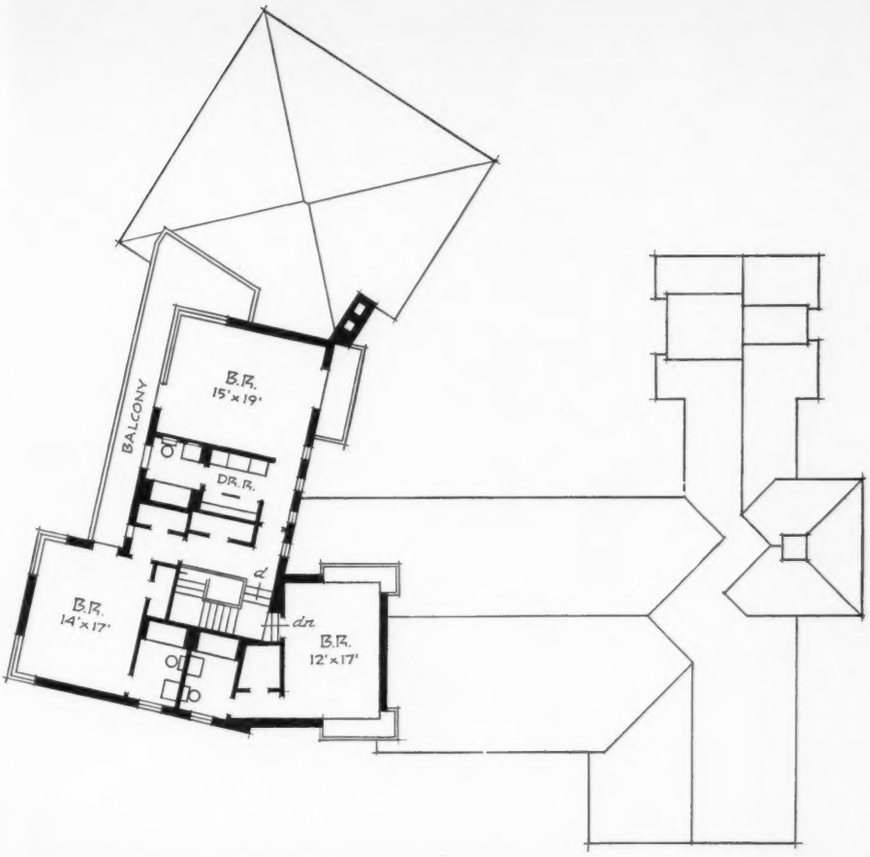
Mr. Weed also experimented early with the filling and polishing of the native quarry key stone—the limestone quarried in the Florida Keys. In his work first appeared this porous, beautifully-figured stone, filled with cement and colored pigment, and then polished. The material, thus treated in many colors, is widely used in Florida today. (See application in loggia across-page.) The loggia, which has bamboo-lattice roof-supports, overlooks the swimming pool shown below. (The photographs were made by Ernest Graham, Cleveland)

ADOLPH DICK RESIDENCE — ROBERT LAW WEED, ARCHITECT

MATERIALS AND EQUIPMENT

FOUNDATION	Concrete piling, reinforced concrete grade beams
TERRACES	Limestone quarried from the Florida Keys
FLOOR STRUCTURE	Free supported concrete slab
WALL CONSTRUCTION	Stucco on concrete block; adobe brick
ROOFING	Shingle-type cement tile over saturated felt
WINDOWS	Casement steel sash with D.S. A. window glass; fixed type steel screens with bronze wire; louvered shutters
FINISHED FLOOR	Marble on first floor; wood on second floor; cement tile in *powder room, lavatory*; wood block in *library*; linoleum in *pantry, kitchen*; tile in *bathroom*; cement in *bedroom* and *servants' rooms*
INTERIOR WALLS	Stud, plaster board lath, and plaster
PAINT	Cement water paint on exterior masonry and concrete; lead, zinc, and oil paint for exterior woodwork; lead and oil primer for interior woodwork and semi-gloss enamel finish coat; casein paint for interior plaster work
HARDWARE	Dull chrome
PLUMBING	Copper tube water piping; vitreous china bath fixtures
HEATING	Electric space heating and domestic water heating

ADOLPH DICK RESIDENCE — ROBERT LAW WEED, ARCHITECT

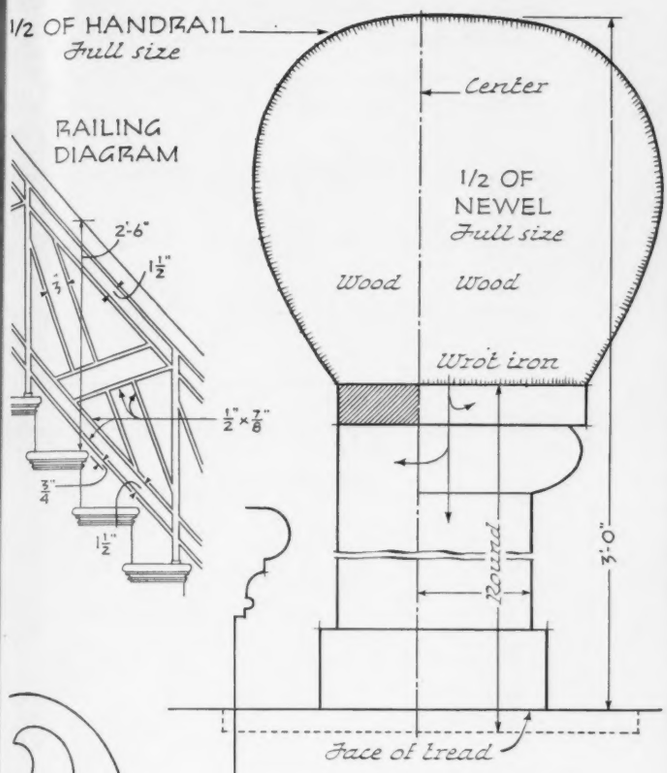


The furniture is so arranged in the living room (below and across-page) as to casually divide it into several living areas. The Venetian blinds provide ample protection against sun glare, yet admit tempered secondary light

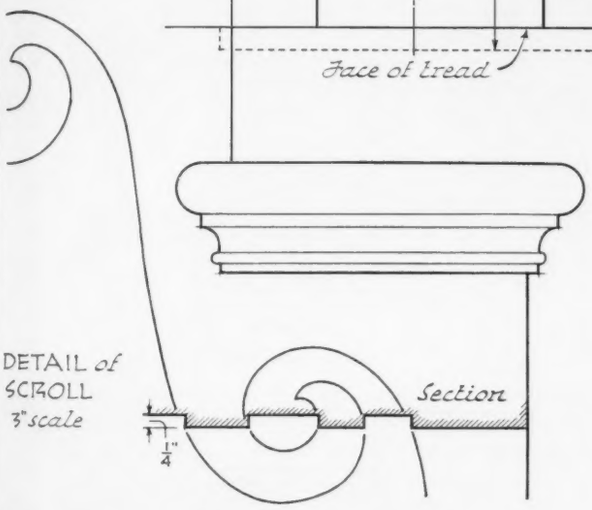
ADOLPH DICK RESIDENCE — ROBERT LAW WEED, ARCHITECT

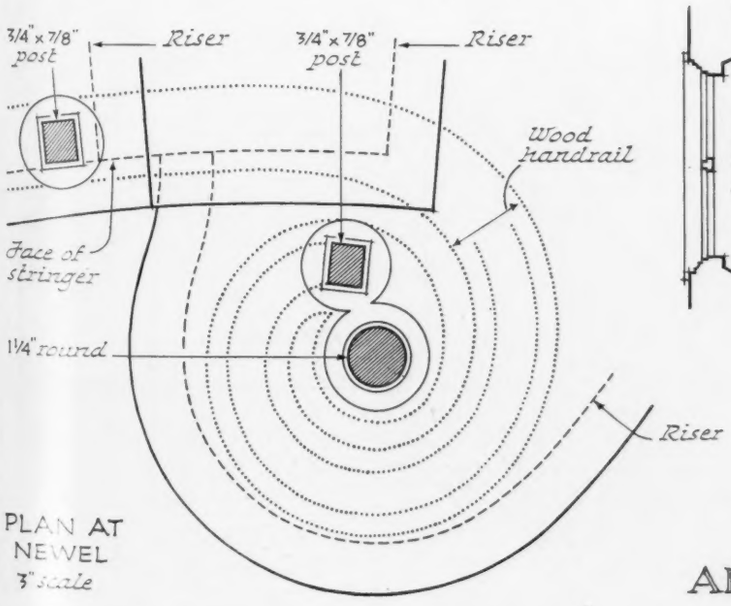
The bamboo design motif is used effectively in the Dick residence. It frames the entrance doorway (photograph above, left) and is used for the newel posts on the stairway (above, right). In this entrance hall, a bamboo-design wallpaper is also used. Illustrated below is the spacious and well-lighted dining room. (See plan on page 158)

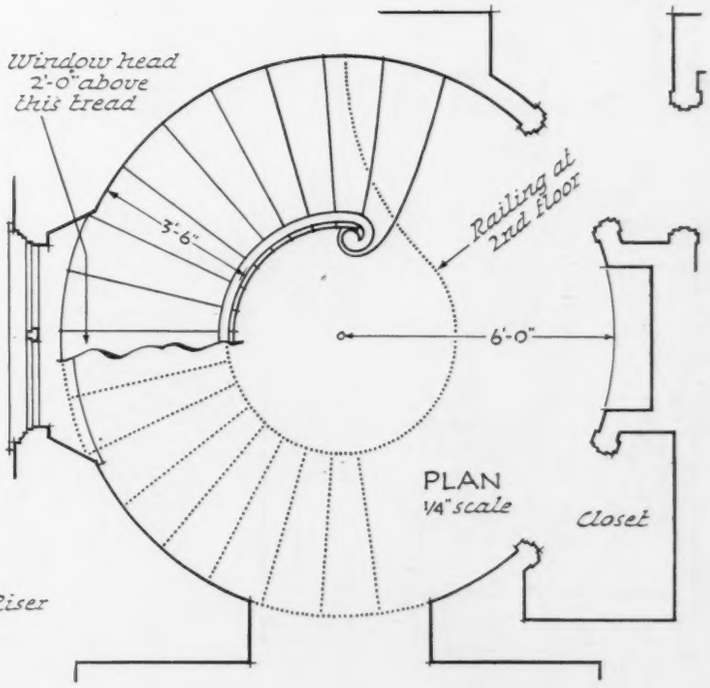
ADOLPH DICK RESIDENCE – ROBERT LAW WEED, ARCHITECT



RICHARD GARRISON

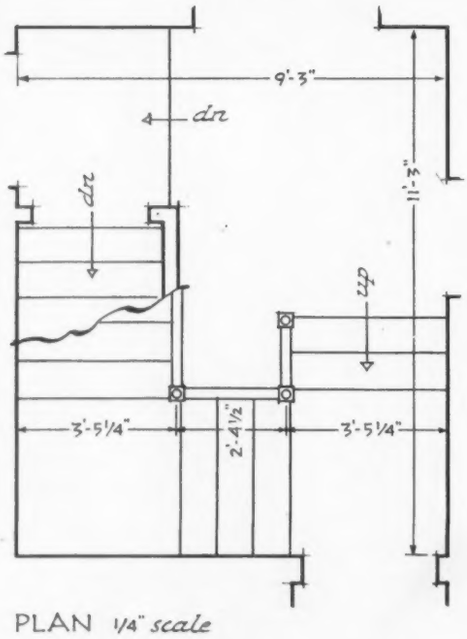




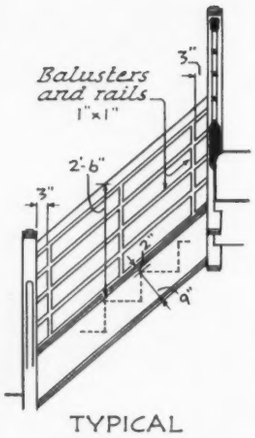


ALBERT HARKNESS *Architect*

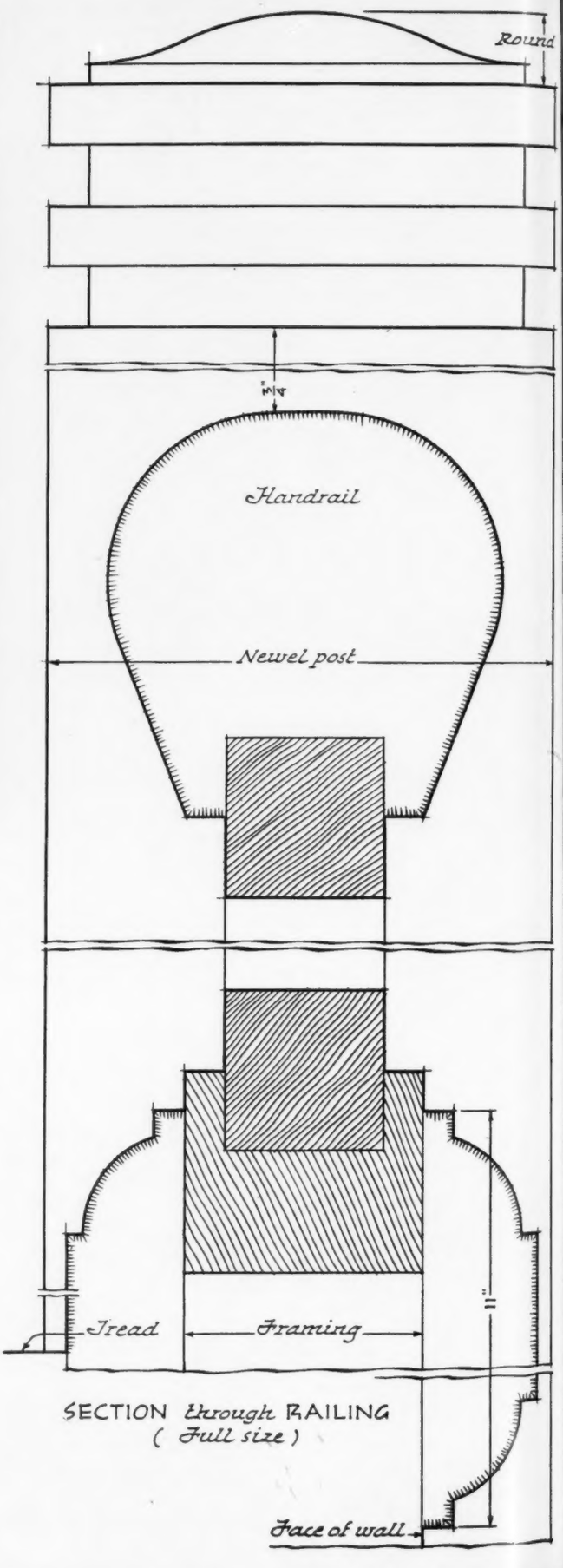
HAROLD A. WILLOUGHBY & ASSOCIATES



PLAN 1/4" scale

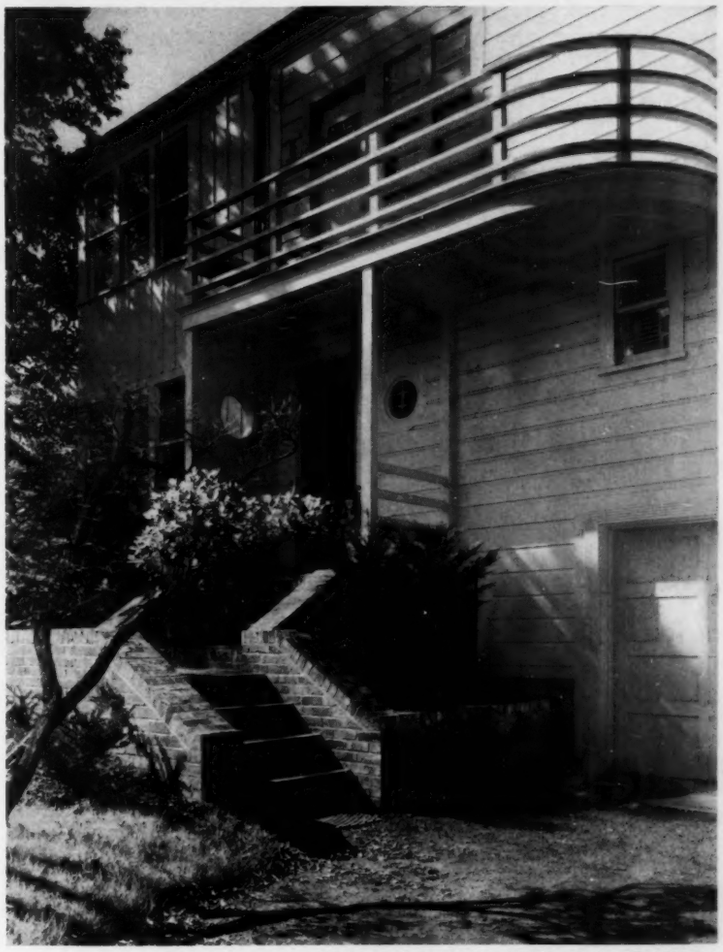


TYPICAL RAILING

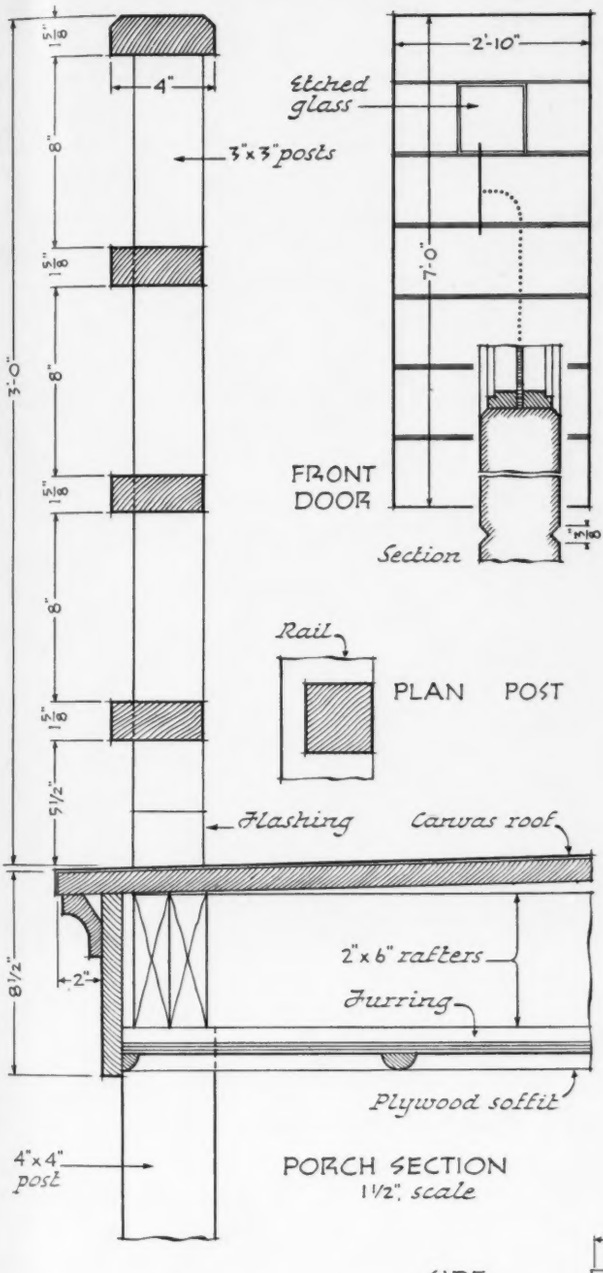


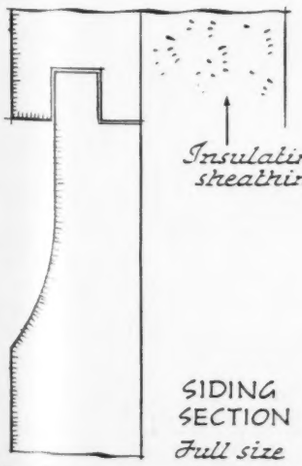
SECTION through RAILING
(Full size)

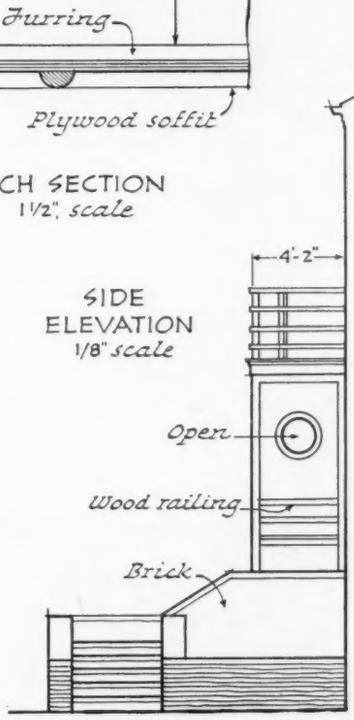
DAVID J. ABRAHAMS *Architect*

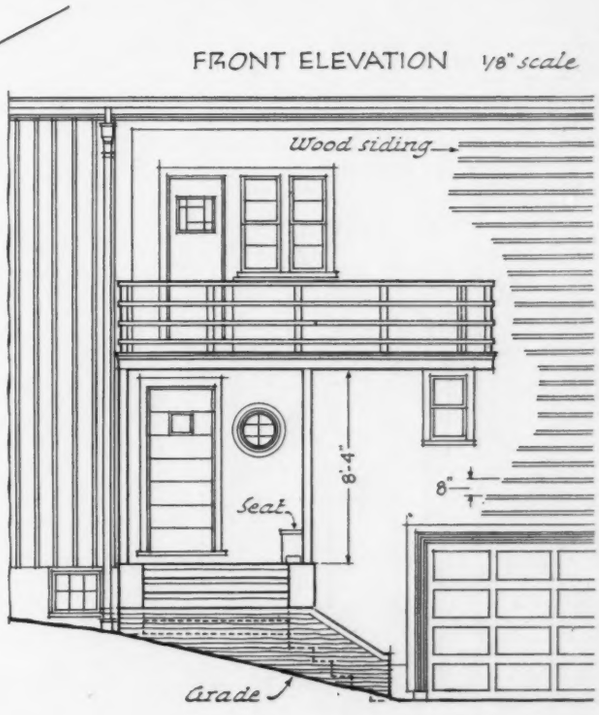


HAROLD A. WILLOUGHBY & ASSOCIATES



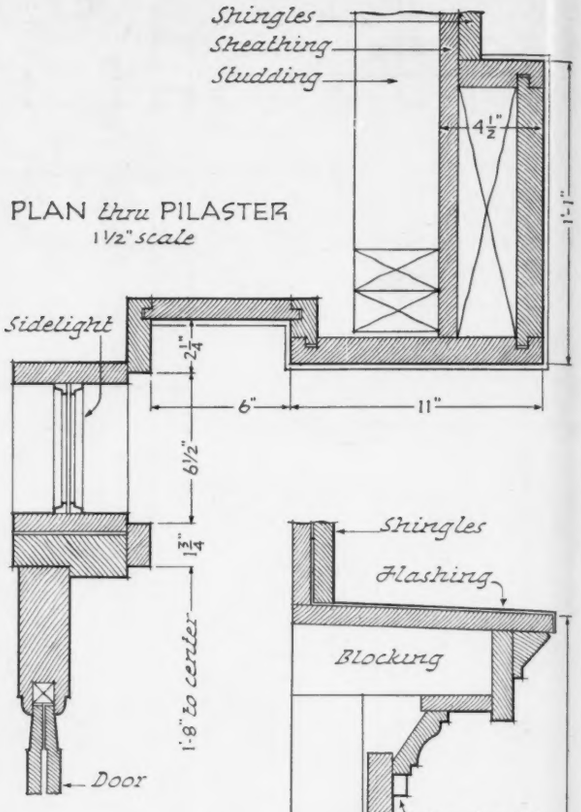


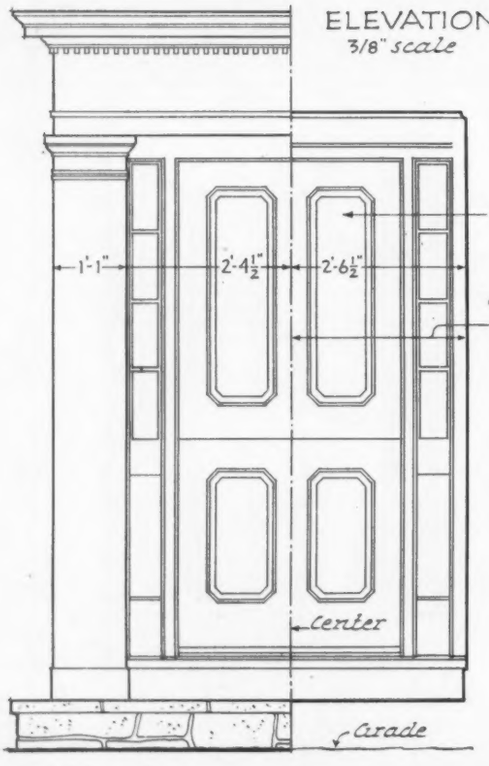


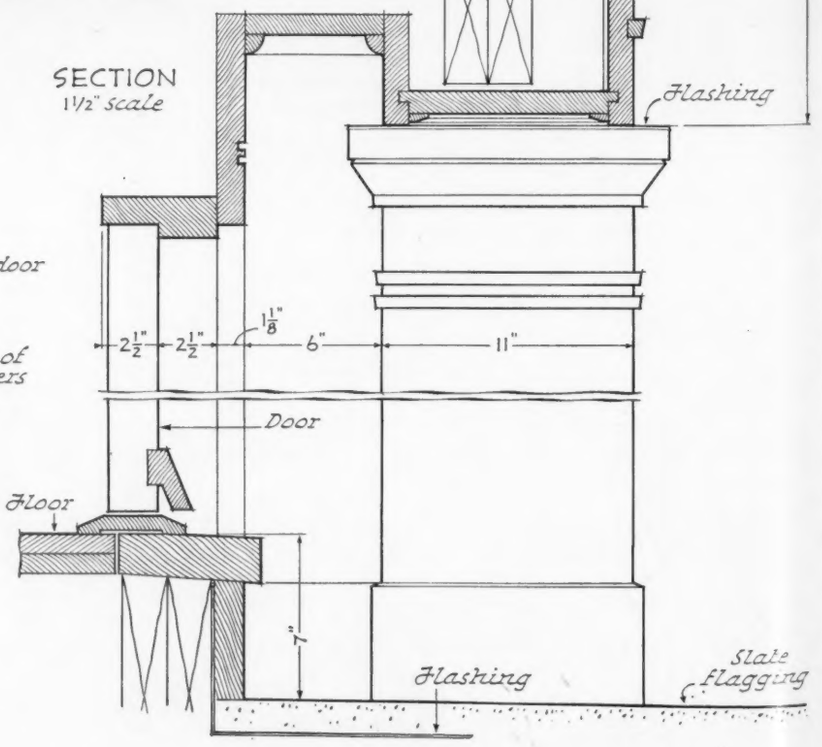


DAVID J. ABRAHAMS *Architect*

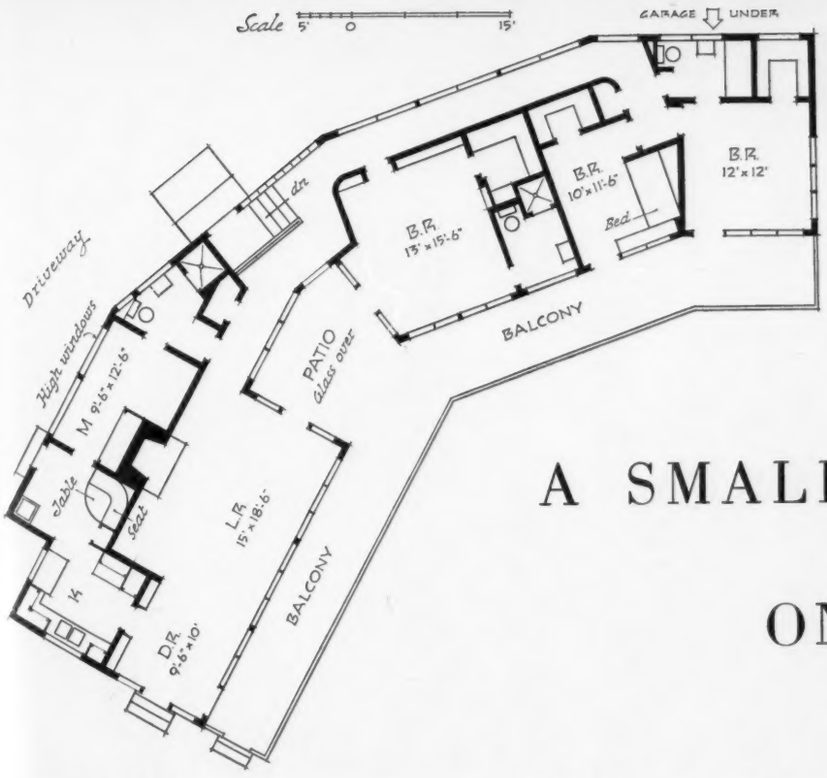
RICHARD GARRISON







CHARLES L. NUTT . . . *Architect*



A SMALL HOUSE ON A HILLSIDE

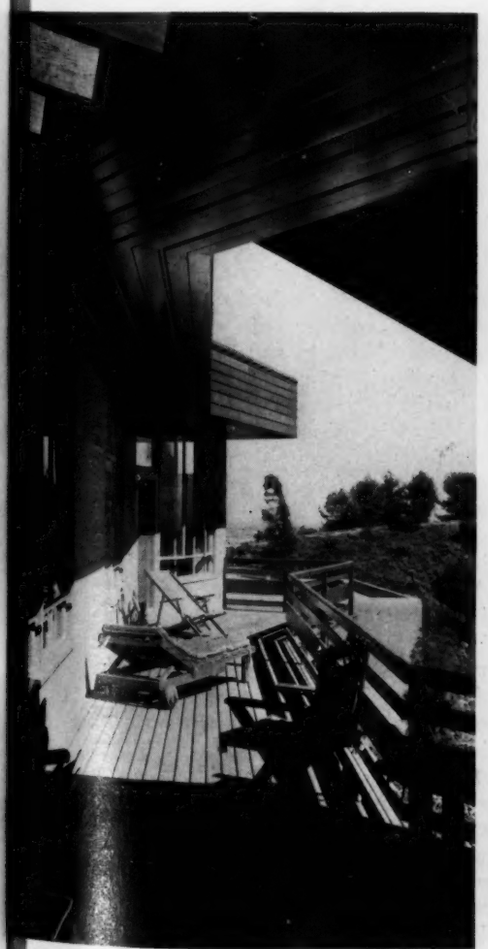
DESIGNED BY PAUL LASZLO, BEVERLY HILLS, CALIFORNIA

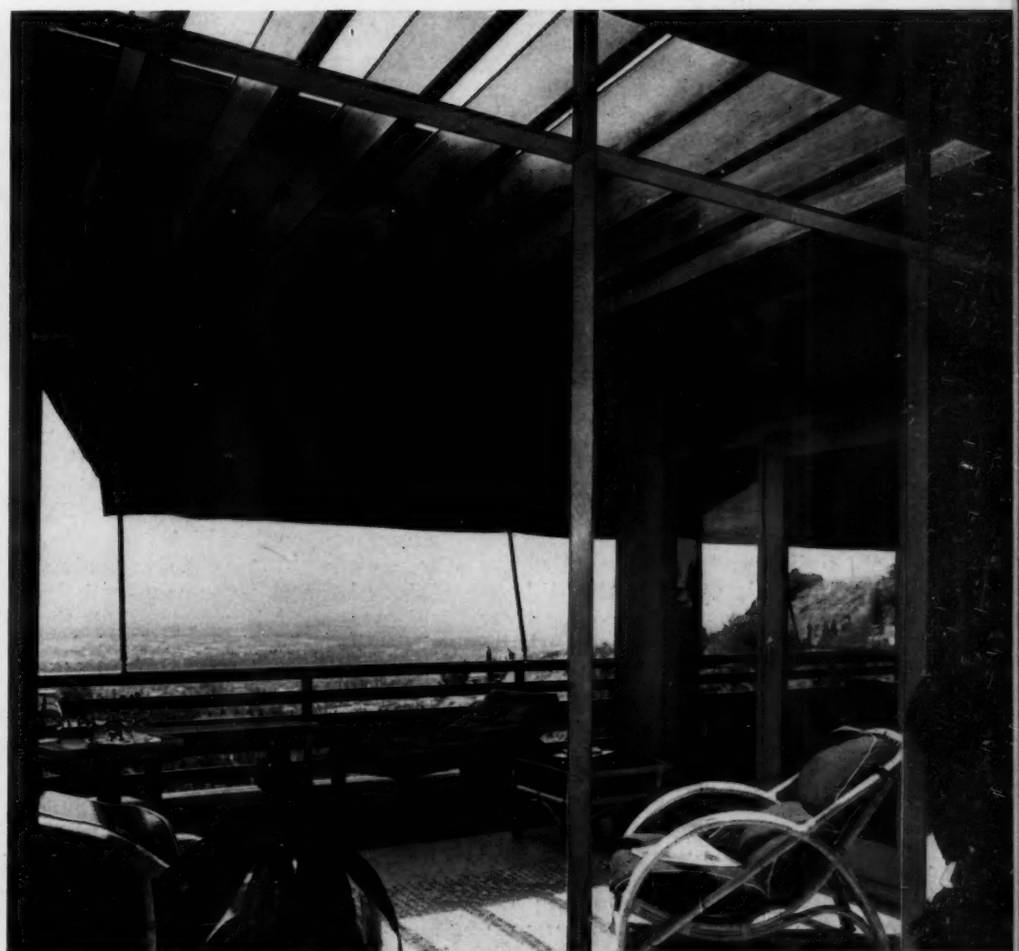
MATERIALS AND EQUIPMENT

FOOTINGS	Reinforced concrete, waterproofed
FOUNDATION WALLS	Reinforced Concrete, waterproofed
EXTERIOR WALLS	Stucco over galvanized wire mesh, 15-lb. saturated felt; 18 ga. galvanized over studs
INTERIOR WALLS	Plaster on keyhole lath over galvanized wire mesh
ROOF	Composition
BALCONIES	Redwood
SHEET METAL	26-ga. galvanized iron
FLOORS	Linoleum in *Kitchen, Bathrooms;* Oak in *Living Room, Bedrooms, Halls,* etc.
WINDOWS	Residential type steel sash with bronze screens
GLAZING	Double strength A
INTERIOR FINISH	Canvas on plaster in all rooms except *Bedroom* near patio; gum paneling
HEATING	Gas—forced air with summer ventilation
LIGHTING	Recessed floodlights in *Kitchen, Bathroom*
HARDWARE	Dull chrome
ELECTRICAL	Flexible metal conduits; residential fixtures
OTHER EQUIPMENT	Electric washing machine, gas range, refrigerator, electric kitchen fan

SMALL HOUSE ON A HILLSIDE – DESIGNED BY PAUL LASZLO

In the design of this small stucco house commanding a panoramic view of Los Angeles, Paul László incorporated the outdoor living qualities that are so characteristic of Southern California. The rugged hillside provides a picturesque setting for the house (photograph on page 165) with its spacious balcony across the rear, wide roof overhang on the south side, and the glass-enclosed patio back of the balcony—all suggesting comfortable living. Beyond the entrance (across-page) is the glass-enclosed living-room patio (lower photograph across-page). The balcony extends the full length of the house (photographs below). Wide windows on the rear light every room. (Photographs are from Julius Shulman)





SMALL HOUSE ON A HILLSIDE – DESIGNED BY PAUL LASZLO

CAN THE PLANNING PROFESSIONS COOPERATE?

BY WALTER R. HAGEDOHM

The most rugged of the "rugged individualists" is without a doubt the architect—and following him (without much distance between) would come the members of the other planning professions. To bring together into a cooperative group such manifest individualists is no small task even when only small numbers are to be considered! But when an entire section of a State, particularly when that State is California, is to be so organized, the *thought alone* is frightening.

However, that is exactly what the State Association of California Architects, Southern Section, is trying to do with its *"Construction Planners, Inc.,"* a cooperative corporation it has sponsored. Membership in the corporation is open to all registered architects in the State of California; registered structural, mechanical, and electrical engineers; civil engineers engaged in private practice, and landscape architects. Thus, in one organization, will be found all the technical and planning talent to carry on any construction planning project, efficiently and quickly, with the forces of established offices working as units under a coordinating head. This prevents the dislocation of forces; the getting together, at obscure localities, of large drafting forces which can only work at a low efficiency. And then, before the men can realize a complete organization, it is uprooted; with the resultant confusion, and loss of time and money.

This corporation forms a responsible party to which the government can confidently allocate defense projects of any kind for rapid handling, with undivided responsibility.

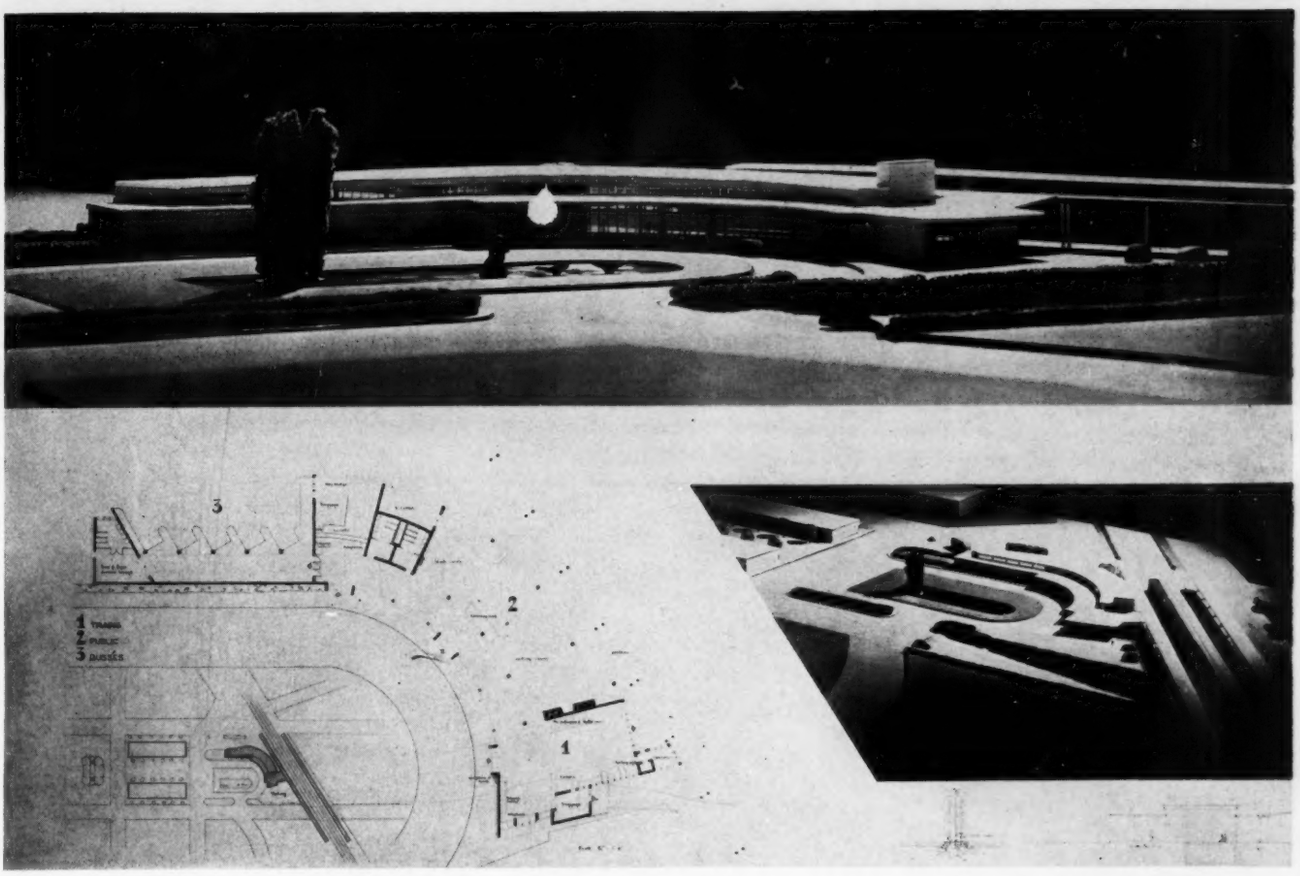
Since obtaining the corporation permit, over one hundred architects, landscape architects, and engineers in all categories have joined. More are being added to the roster every day. Each office is tabulated—the force available, the equipment on hand, the experience of the office in various types of buildings and construction, and other pertinent data. Each member is permitted only one vote with his certificate of membership. The executive board is elected by popular vote and is known as the Board of Directors. A managing director handles the work through an administrative staff, which is employed by and is responsible to the Board of Directors. *All of the planning professions* are represented on the Board of Directors.

Many problems have arisen, of course, but so far they have been taken in stride, adjustments made to fit conditions, and the organization proceeds. Most of the difficulties are the usual human ones —but the major one is that many still cannot realize *times have changed.* Things are not as they were in the Roaring Twenties—and probably will never be again. From now on it will be necessary to work even more closely together. There is a war to be won—and the talents and full resources of the planning professions are needed to aid to that end. In organizing this corporation it continuously has been brought to the attention of the members that this is *not* to be a means of making millions; but a method of preserving the planning professions as trained and efficient units in the task of winning the peace—by having them available and ready, instead of scattered and unorganized!

The reactionary attitude is being overcome by the very times in which we live. Private work has long since disappeared. Government projects are not easily obtained by smaller offices. A vehicle has been provided here for the architect and engineer to get some of this work—to keep the small organization intact—to remain somewhat of an individualist!

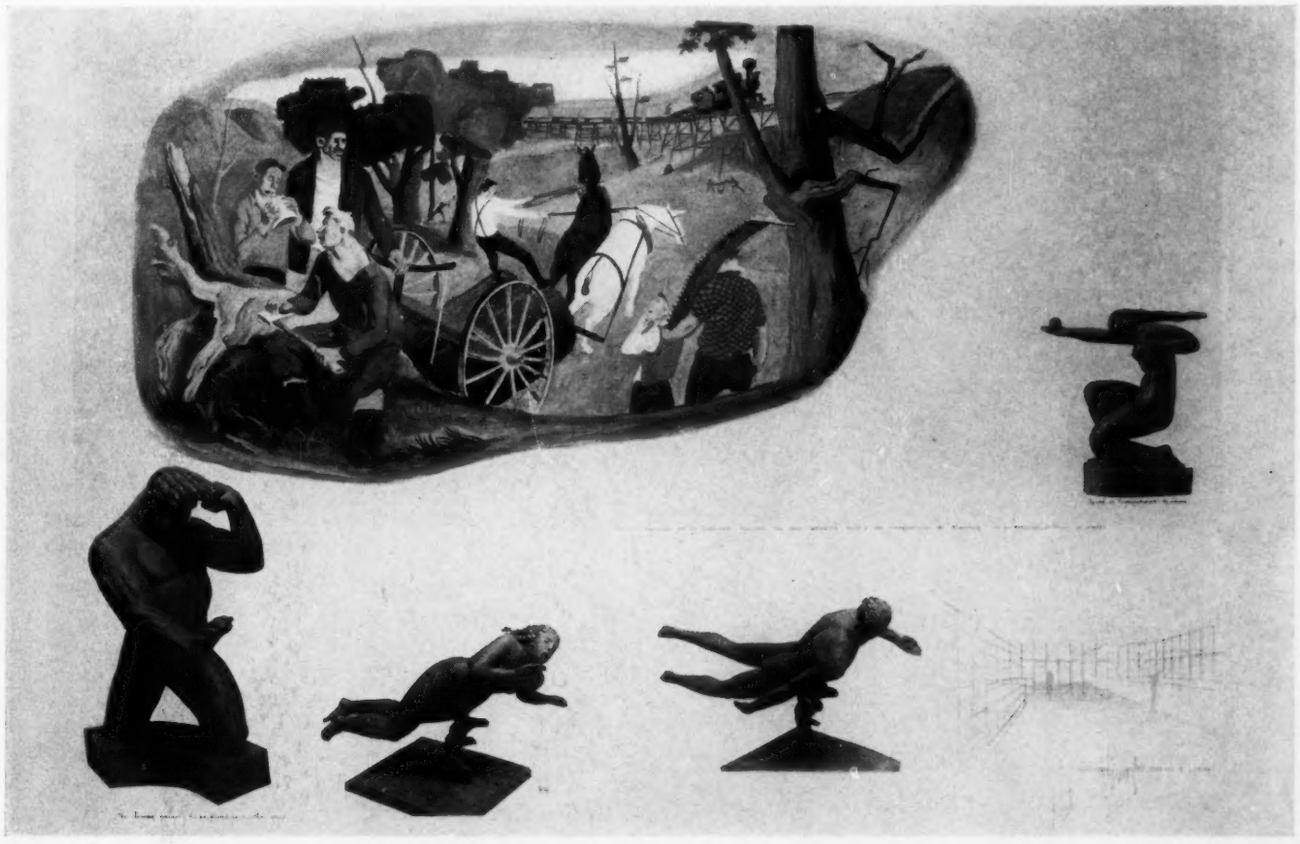
The next problem is to secure sufficient work to keep *this* organization functioning. A vehicle has been provided in Southern California by which the government can promptly, efficiently, and economically handle its Victory Program. It will avoid duplication of effort and overlapping of various agencies, with the resultant division of responsibilities. It will permit the governmental agencies to return to their original functions of fact-finding and consulting. It will provide a method of spreading a large volume of government-sponsored work to smaller units of professional activity; and maintain them as tax-paying bodies.

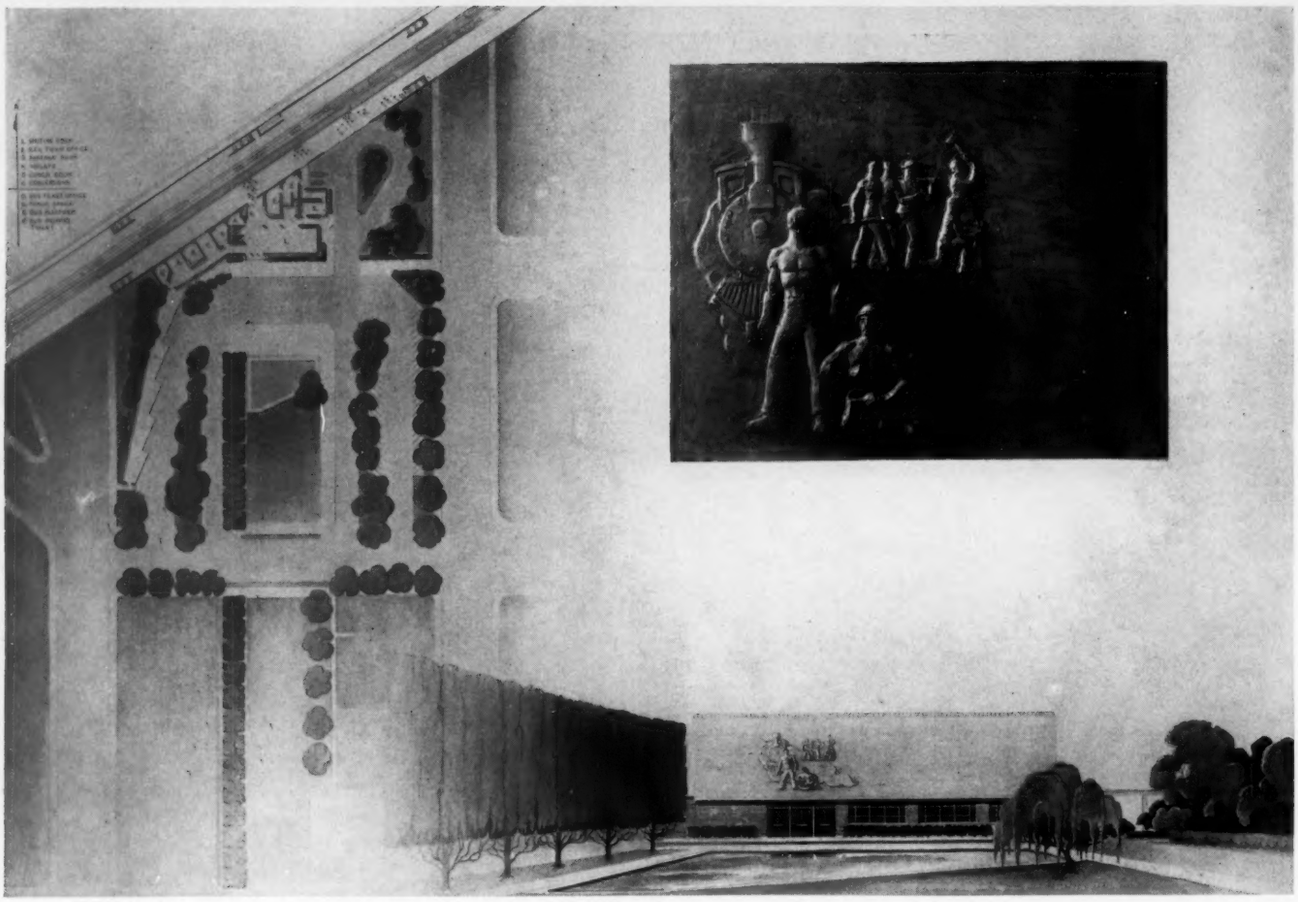
What is going to happen to the architect or engineer who now receives work directly from the government? *Nothing.* He will still receive his share and will not be interfered with by the corporation. A survey made before organizing indicated that of over ninety million dollars worth of defense work performed in Southern California during a four-month period, only eighteen and one-half percent was handled through private architect and engineers! That leaves over eighty percent for the cooperative corporation to work on! That, with the Long-range Planning Program, for post-war construction, will keep Construction Planners Inc., busy; and the men in the planning professions in a compact group for efficient action!



First prize of $200, awarded by the Alumni Association of the American Academy in Rome for the best solution of its timely collaborative competition, "A Railroad Station and Bus Terminal for Appleton, Wisconsin", was awarded to a team from the Cranbrook Academy of Art. Members of the team were Miss Ann Sirotenko and Stephen S. Page, who collaborated as Architect and Landscape Architect; Jack Steele, Painter; Winslow Eaves, Sculptor. *(See also page 170)*

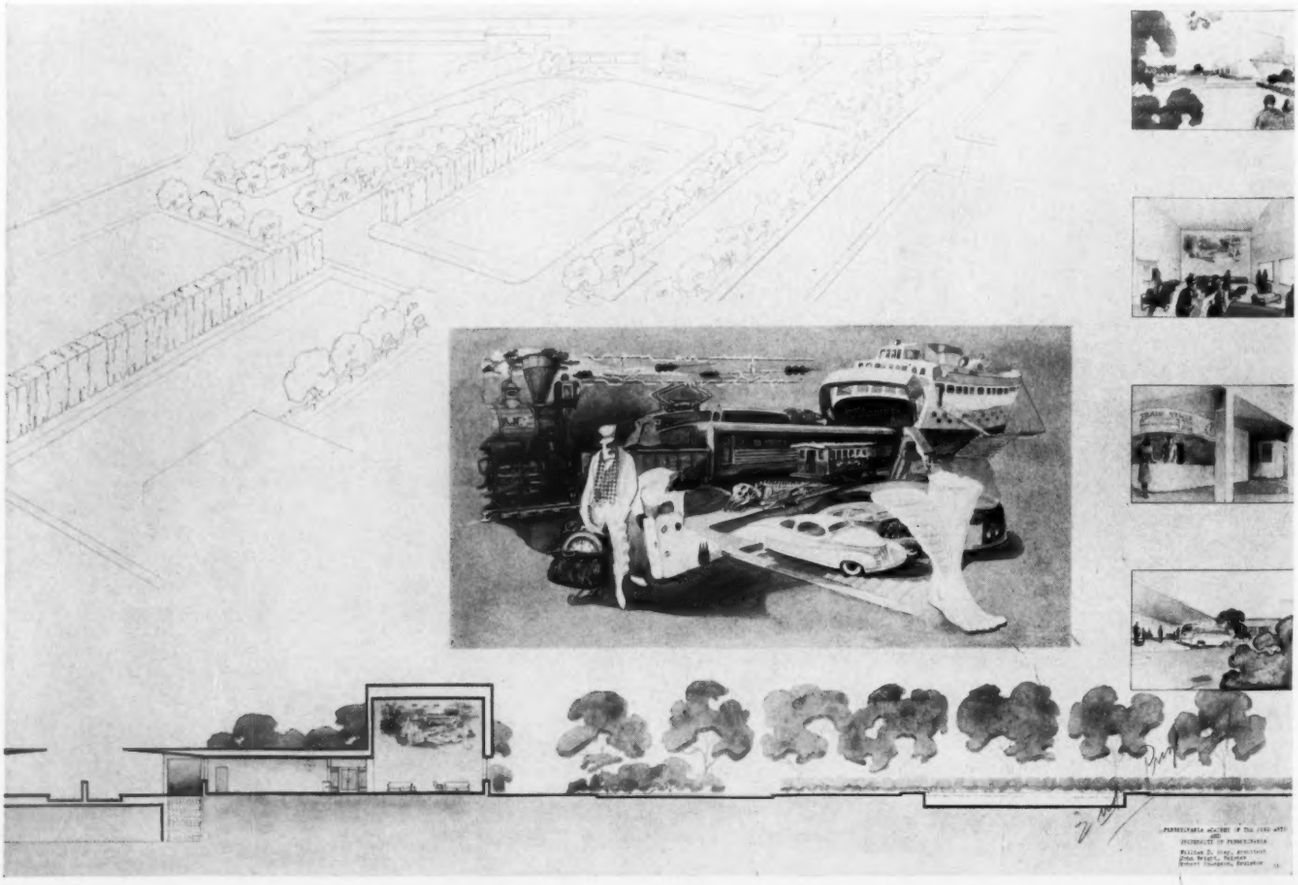
THE 16TH ROME COLLABORATIVE COMPETITION





THE 16TH ROME COLLABORATIVE COMPETITION

A team from the Pennsylvania Academy of Fine Arts and the University of Pennsylvania won second prize of $100. On the team were William D. Shay, Architect; John Wright, Painter; Robert Spurgeon, Sculptor. (See page 169 for first prize winners). Serving on the Jury of Award were Edgar I. Williams, William L. Bottomley, and Lorimer Rich, Architects; Robert L. Fowler, Jr. and Michael Rapuano, Landscape Architects; Gaetano Cecere and C. Paul Jennewein, Sculptors; and Russell Cowles and Carlo Ciampaglia, Painters. Fifty-eight teams from fifteen colleges and art schools participated in the competition



WASHINGTON REPORT

COMPILED BY A. D. TAYLOR OF CLEVELAND

GENERAL TREND

The agencies of the Government, through whom the new program of housing for war workers will be administered, are much the same as the Government agencies which have heretofore been responsible for this part of the Housing program. There has been no change since the February report. The program of housing for war workers has been greatly increased in each of the agencies to be responsible for this work—Construction Division of Federal Works Agency, United States Housing Authority, Public Buildings Administration, Defense Homes Corporation, and Farm Security Administration.

There has been increased speed because of the necessity of providing houses at the earliest possible date for workers in Defense areas, primarily in the private industrial plants and in the Government Ordnance plants.

Additions to the present personnel are being made, especially in the Construction Division of the FWA. The amount of *private* work requiring the services of Architects, Engineers, and Landscape Architects, conducting offices in *private* practice, is rapidly decreasing, with a corresponding increase in the number of applicants seeking employment as Architect-Engineer on Federal projects, or as salaried employees on the Government payroll. With the enlarged program of construction there is strong possibility that many members of the technical planning professions will be placed in the group of commissioned officers to serve the Government on the many construction projects, and as civilian salaried employees of Government agencies.

★

VICTORY HOUSING

Too much emphasis cannot be placed upon the importance of having one's name upon the mailing list in the Office of Information, Federal Works Agency, North Interior Building, Washington, D. C., to receive the news releases published by this office with extreme promptness and containing up-to-the-minute information on the allocation of funds for housing for war workers. This information is available to the technical planning professions before any Architects-Engineers, or Landscape Architects, are employed. It is available in many instances before the site has been selected.

It is very important that those who are seeking contracts to provide professional services on housing projects and on other projects should study carefully the organization charts previously published in these pages. Without this full knowledge of this part of the Government organization the applicant for professional work is greatly handicapped.

Attention again, is called to the "Defense Housing Construction Bulletin," published by the Federal Works Agency, Office of Information, and containing detailed information in tabulated form on the status of projects under the Federal Works Administrator.

For over-all information, attention is further called to the "Victory" magazine, published by the Office of Production Management.

★

EMPLOYMENT

The great concern of the majority of the unemployed, and temporarily employed members of the technical planning professions, is to find the opportunities for employment. So much of the prospective employment is through the Washington offices of the Federal agencies and their respective Regional offices, distributed in many cases throughout the United States, that the applicant for employment, having little knowledge of the organization of Federal agencies, experiences difficulty in locating these opportunities. These agencies are: Construction Division, FWA; United States Housing Authority (USHA); Public Buildings Administration (PBA); Corps of Engineers, Division and District Offices; Navy Department, Bureau of Yards and Docks; U. S. Army Air Corps. Many opportunities for temporary employment are available through the offices of Architect-Engineers engaged to provide services on Victory projects, through the manufacturers of prefabricated houses (with their Field Erection Contractors) and with municipalities engaged in the preparation of plans for post-war construction.

The most important question confronting members of the technical planning professions, aside from the sources of employment, is the *method* of procuring employment. Those conducting offices, or identified in groups represented by different offices, and considering themselves qualified to provide complete service on a contractual basis as Architects-Engineers, should have their applications on file with the War Department, the Navy Department, the Federal Works Agency, and the Public Buildings Administration. The file of such applications in the Construction Division of the FWA, concerned with housing of a temporary character for war workers (demountable or prefabricated units) is already of considerable size.

Those desiring employment with Federal Agencies on a salary basis should have their written applications, with a clear statement of their experience and qualifications, in the files of each of these agencies engaged in the construction program. Unless one has personal contacts through acquaintance with Government officials within these agencies, a great amount of time and of money can be expended for a trip to Washington seeking employment. The wave of applicants now asking for appointments in which to discuss possibilities of employment is seriously handicapping those who should be otherwise engaged in providing the technical services for which they have been employed. A strong letter of endorsement, together with a properly prepared application, will in most cases accomplish as much as any trip to Washington.

In addition to salaried positions on the Government payroll, there

are many positions of a somewhat more temporary character to be procured through the Architect-Engineer working on the problems of planning and supervision for the major construction projects. There continues to be difficulty in procuring information concerning the appointment of Architects-Engineers on these specific projects, and also of procuring the addresses through which to apply for such positions. This condition should be corrected.

★

VICTORY HOUSING: FWA

Engineers, Architects, and Landscape Architects are being employed under the heading of Architect-Engineer to prepare plans and supervise the construction of these projects. The technical services on these demountable housing projects are concerned primarily with engineering as related to roads, grading, and utilities, and to site planning, which is a highly specialized field of design. Architecture, as such, is a small part of the problem on projects developed with *demountable* houses, except where such projects are of considerable size and located away from any center of population, thus requiring the design and construction of community buildings (for schools, business, recreation, maintenance, administration, and operation). On projects such as are being developed with *permanent* houses through the USHA, architecture becomes a factor which dominates the design program.

Approximately fifty of these demountable projects are now in the planning or construction stages. They range from approximately 200 units to 5,000 units in a single project. As of the present date, the general design conforms to modern sub-division requirements with each lot having frontage on an improved street, as against the superblock, group-housing pattern, so much used in the extensive program of low-rent housing.

★

VICTORY HOUSING: USHA

The United States Housing Authority is starting on a very extensive program of housing for war workers, the greater part of which will probably be done through the Local Housing Authorities, from whom recommendations will be received by the USHA as to members of the technical planning professions (qualified through experience, ability, and organization) to design and supervise these projects in accordance with the schedule for completion. This program for housing is being made public in the releases from the FWA, Office of Information.

★

VICTORY HOUSING: OTHER AGENCIES

A large program of housing for war workers, under appropriations referred to in the February report, will be undertaken through the Public Buildings Administration, the Farm Security Administration, and the Defense Homes Corporation. The Public Buildings Administration has indicated its intention of adopting much the same procedure heretofore adopted by the United States Housing Authority, i.e., employing members of the technical planning professions in private practice to provide services on a lump sum or fee basis for design and supervision.

The Farm Security Administration will be concerned in this program, largely with temporary units of a demountable type and with dormitory units. The Defense Homes Corporation will be concerned with both types of housing and is employing members of the technical planning professions in private practice, to provide services.

★

GOVERNMENT AGENCIES

There is strong possibility that the entire program of housing for war workers, now administered by the Construction Division of FWA, the United States Housing Authority, the Public Buildings Administration, the Defense Homes Corporation, Federal Housing Administration, and the Defense Housing Coordinator's Office, will be put under one administrative head.*

Progress has been made through the joint efforts of different agencies to adopt the standards of design, schedules of fees, and general procedures which heretofore have been the specific prerogative of each separate agency.

The United States Housing Authority, which has heretofore been decentralized only to the extent of having two of its regional offices (at Fort Worth, Texas, and at San Francisco, California) located away from Washington, is now decentralizing all of its regional offices, as follows: Region 1, Boston, Mass.; Region 2, New York City; Region 3, Washington, D. C.; Region 4, Atlanta, Ga.; Region 5, Chicago, Ill.; Region 6, Fort Worth, Texas; Region 7, San Francisco, Cal.

★

COMMUNITY FACILITIES

The rather extensive program of community facilities (consisting of Utilities, School Buildings, Recreation Buildings, and other service buildings) will continue. Engineers and Architects in private practice, located within the areas where these projects are constructed, will be increasingly employed, largely through the Office of the PBA, to prepare plans and provide supervision.

★

EMPLOYMENT STABILIZATION ACT

This Bill, "S.1617", "to amend the Employment Stabilization Act of 1931," is being held for further consideration. The purpose of this Bill, as and when passed, is to provide money for allotment to Federal, State, and Municipal Agencies, etc., to be used "for the making of such examinations, surveys, investigations, legal studies, comprehensive plans and programs, engineering plans and specifications, etc., as may be necessary to facilitate and expedite the selection, financing, and inauguration of public improvements, etc". It is provided that such advances to these agencies shall be "subject to such requirements as to reimbursement, or with respect to contribution of funds, services, or materials, as the President may determine".

As and when this Bill is passed it will be possible, under the conditions prescribed, to have funds available with which to aid the municipalities, among other agencies, in financing planning programs in preparation for post-war projects under the Public Works Reserve.

★

CIVIL SERVICE

Civil Service regulations have been modified so that members of the technical planning professions desiring employment on a salary basis in the Federal Government agencies will find opportunities to procure such employment much less difficult than heretofore, when Civil Service status was required in order to procure an appointment in Federal agencies.

February 16, 1942

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* *On February 24 all agencies were, by Executive Order, placed under one Administrative Head. The USHA now becomes the Public Housing Authority.*—Editor

PENCIL POINTS DATA SHEETS

Prepared by DON GRAF, B.S., M.Arch.

GENERAL DATA ON RESIDENTIAL A.R.P.

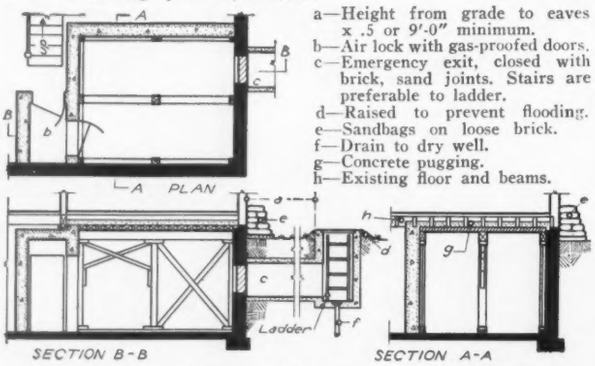
Index No. **F 19 g** CONSTRUCTION

PENCIL POINTS DATA SHEETS PREPARED BY DON GRAF

SET 21 MAR 1942

Shelter space for individual homes should be located in the area best suited to the fundamental factors outlined. Such a space may be constructed to give a degree of splinter, blast, incendiary and gas protection. Generally, basement shelters below ground have a natural lateral splinter and blast resistance, but are liable to concentrations of heavy gases and danger from bursting water and sewer mains. First floor shelters are generally more difficult to strengthen. It is advisable that no steam or gas lines run thru the shelter space.

Access. The chief advantage of shelters within the home is their accessibility. Provide 2 means of egress, remote from each other. One of these may be essentially an emergency exit. A cellar window protected by boxes of sand or sandbags to prevent entrance of splinters may serve this purpose. An exit may then be forced thru in an emergency. An exit as shown, extending far enuf from the building to avoid blocking by debris, is better.



a—Height from grade to eaves x .5 or 9′-0″ minimum.
b—Air lock with gas-proofed doors.
c—Emergency exit, closed with brick, sand joints. Stairs are preferable to ladder.
d—Raised to prevent flooding.
e—Sandbags on loose brick.
f—Drain to dry well.
g—Concrete pugging.
h—Existing floor and beams.

Shoring. Debris loads and weights of added protection require the strengthening of the shelter ceiling. Shoring by means of wood posts or metal columns with beams and planking, as shown, is necessary. Wedges at the base of struts can take up any shrinkage of horizontal grain. The weight must be distributed over the existing floor slab by continuous shoes.

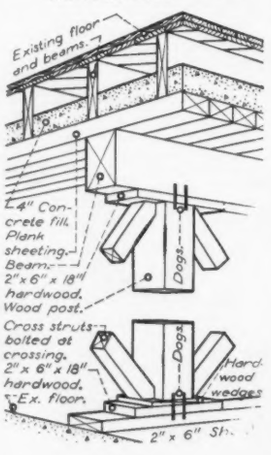
Existing first floor must be taken up to insure distribution of poured concrete between the existing beams.

Cross braces, properly fitted between the posts, help to overcome deformation from horizontal loads.

Sizes of the strengthening members are variable, depending on the existing conditions and degree of protection needed. Debris load tables are given on *Data Sheet* F19e.

Tables reprinted from British sources have been found, on checking, to be erroneous.

CAUTION: Do not use any tables for carrying debris loads without a careful engineering check.



GENERAL DATA ON RESIDENTIAL A.R.P.

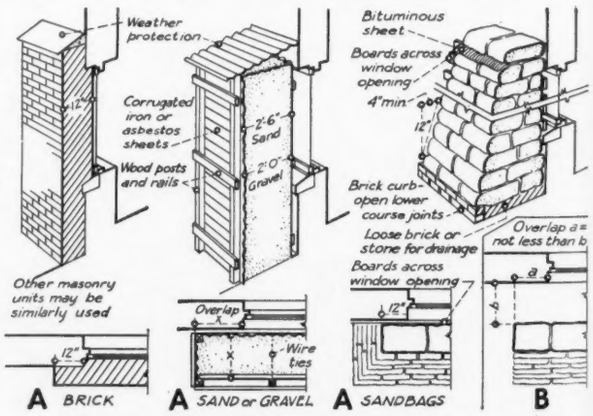
Index No. **F 19 h** CONSTRUCTION

PENCIL POINTS DATA SHEETS PREPARED BY DON GRAF

SET 21 MAR 1942

Walls enclosing the shelter should be designed for lateral protection against blast and splinters, of 13½″ brick or 12″ of reinforced concrete, see *Data Sheet* F19e for complete table of materials. Walls of first floor shelters or any parts of basement shelters extending above grade level should be protected. Sandbags will give this protection but are subject to rot and vermin and require replacing. Sand filled masonry units such as concrete blocks or bricks are better and may be laid so that they may be reused later. Basement areas must be closed. Sandbagged areas may be used as emergency exits but are subject to blocking by debris.

Windows that are not absolutely necessary should have the glass removed and be bricked up or barricaded by sand or earth between wood or corrugated iron forms. Such protection should extend 1′-0″ beyond the window opening to prevent it from being blown into the shelter, as at *A*. Windows or door openings needed for light or egress should have the revetments extend past the opening by at least the distance from the exterior surface of the wall to the inside face of the revetment, as at *B*.



Shutters of steel would have to be 1½″ thick to give recommended lateral protection and be solidly anchored to the wall construction. These are costly and not easily handled. Shutters are generally used on upper floors where barricading is not possible, and fragment resisting shutters are recommended. Wood shutters 2″ or 3″ thick afford reasonable protection in partly shielded locations. Inside shutters also stop the flying of glass. Effects of distant blasts can be offset by removing the window and providing a light wood or canvas covered frame hung on short straps so that it may be dislodged and readily replaced from the inside. Such frames are satisfactory for blackout if sufficiently opaque, and they may also be fitted with ventilating louvers providing same prevent the passage of light.

Glass. There is no positive way to prevent the breakage of glass. Sheets or strips of material cemented to the glass will tend to prevent the glass from flying in splinters. Such tapes should be closely applied and materials and adhesives must be of types which will retain their strength and adhesive qualities for a reasonable time under exposure. Wire mesh and screen are also suggested to prevent flying splinters.

Laminated glass or flexible glass may be substituted to prevent glass splinters. Wood strips nailed across the sash help to prevent such panels from being blown out.

PENCIL POINTS DATA SHEETS

GENERAL DATA ON RESIDENTIAL A.R.P.

Index No. **F 19 j** CONSTRUCTION

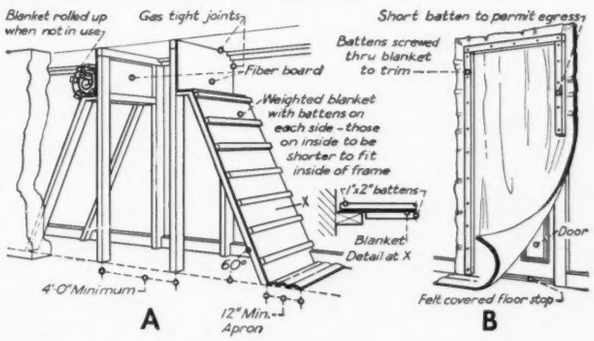
PENCIL POINTS DATA SHEETS PREPARED BY DON GRAF

SET 21 MAR 1942

Gas Proofing in a home shelter requires the sealing of all cracks or other possible openings where gas may enter. Cracks between floor boards or in the plaster of walls and ceilings, cracks around doors and windows or at the trim, keyholes, and where pipes come thru the floor must be calked and sealed. Fireplace openings must be closed with plywood or other board and sealed.

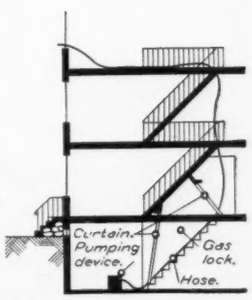
Since blasts during a raid may cause new cracks, necessary sealing and calking materials such as newspaper pulp, scotch and gummed tapes, hammer and nails, etc., must be kept available within the shelter. In first floor gas proof rooms, the window glass may be shattered and wooden covers to cover the entire window opening, properly calked, should be used. They will also stop the flying pieces of shattered glass.

An air lock must be provided. A narrow passageway may be fitted, as shown at *A*, with openings covered by oilcloth or blankets. This prevents drafts of gas-laden air from being drawn into the enclosure as persons enter or leave the shelter. An alternate blanket covering for a single door is shown at *B*. Ordinary blankets must be kept dampened with a spray of bleach water to prevent the passage of gas. Oilcloth or other treated materials do not require this.



OCCUPANCY. An ordinary, unventilated gas-tight space 10'-0" x 12'-0" x 8'-6" high will provide a 4-hour occupancy for 5 persons, based on a recommended 50 cubic feet of volume per person. If the walls and ceilings are of 12" thick concrete to take care of respiratory effects, this occupancy could be 10 hours.

The time of occupancy can be lengthened by bringing in gas-free air from the upper levels. Such ventilation could be accomplished by a rubber hose extending from a pumping device in the shelter to an upper story window above the gas level. An air lock must be provided. Shown on the drawing is a stairway gas-stop similar to that shown above. The stair must be enclosed between gas-tight walls.



An electric fan to increase air movement and cotton bags filled with activated charcoal and lime to absorb odors are helpful to the general comfort in gas-tight shelters.

Oxygen consuming devices, such as exposed flames of candles and lamps, and air contamination by smoking must not be allowed.

GENERAL DATA ON RESIDENTIAL A.R.P.

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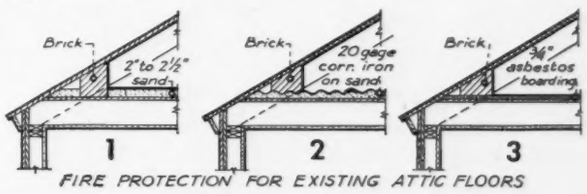
Fire Hazard. When dropped from 5,000 feet the usual 1 kilo (approximately 2 pounds) incendiary bomb can pierce any ordinary roof including tiles, slate, and corrugated iron and an underlying plaster ceiling, but probably not a wood floor below. Such bombs are very apt to land and burn in the attic while the occupants are in a basement shelter. Therefore, it is necessary to remove any excess inflammable material from the attic and protect the floor to prevent the bomb from burning thru to lower floors. Convenient access to the attic and fire fighting equipment such as sand, shovels, buckets, snuffers, water, etc., must be available. Thermite creates its own oxygen while burning and cannot be smothered; water will make it explode. The burning of the magnesium which follows can be smothered. Water, in a spray form, can be used to accelerate and shorten this burning while dampening the surrounding materials.

A layer of steel plates ¼" thick or a 4" reinforced concrete slab will provide attic floor protection, but with the necessary strengthening required in existing buildings to sustain the added weight, these methods are costly.

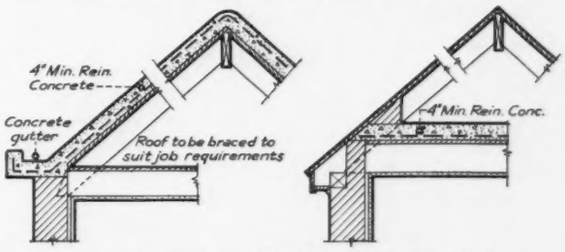
Alternate fire-resisting protection may be:

1. 2" to 2½" layer of sand, earth, sifted ashes or foamed slag.
2. Sheets of 20 gage corrugated iron separated from the flooring by a thin layer of sand.
3. A ¾" layer of asbestos boarding of a type free from cement or anhydrous plaster.

Exposed wood should be fire-retarded with fire-resisting paint or heavy whitewash.



FIRE PROTECTION FOR EXISTING ATTIC FLOORS



TYPES OF REINFORCED CONCRETE SLABS

Equipment. During a prolonged occupation it is necessary that all possible conveniences be incorporated in the shelter. These should include a chemical toilet, drinking water, food in airtight containers, flashlights, blankets, bleach water for wetting the blanket covering at door, gas masks, battery radio sets, sand, water and pumps for fire extinguishing, first aid equipment, etc., as may be needed during the interval. Tools such as pickaxe, shovels and crowbars may be necessary for forcing an exit in case of a near hit blocking the exit.

SIGHT-LINES IN THEATERS

BY FREDERIC A. PAWLEY

The following study of some phases of auditorium seating and scene visibility is not presented as a panacea but as another step toward more logical theater planning. The formulae and methods demonstrated cannot be exact because of physical differences of members of an audience. Certain rules and layout methods long in use are analyzed and replaced or improved. A graphical presentation shows for the first time the relations of a number of seating variables. This data naturally cannot be a substitute of good planning sense, which also includes theater economics, but it can assist in improving the functional design of this building type.

Some of this technical data will show how to improve vision of stage or screen in flat-floor, multi-purpose halls with movable seats—as well as in more specifically planned theaters. The limits given for side-angle and maximum views will prevent the eyestrain resulting from improperly planned motion picture halls. Such results have a definite value for our current program of national defense with its increased need for healthful recreation and evening entertainment after intensive daytime training or production work.

SEATING RADIUS

One problem which has had numerous tentative solutions in the history of theater planning is the determination of a logical center for a radial seating plan.

It seems obvious that when dramatic action is to be concentrated in a relatively small acting area, or upon a motion picture screen, there is a fixed center of interest for the audience in general. The desirability of a radial plan with center at this fixed point is illustrated in the accompanying three diagrams, A, B, C. This center has been taken usually at the positions indicated in the second group of diagrams, as at D or E, or at various intermediate points; less often as in the more logical diagrams F and G.

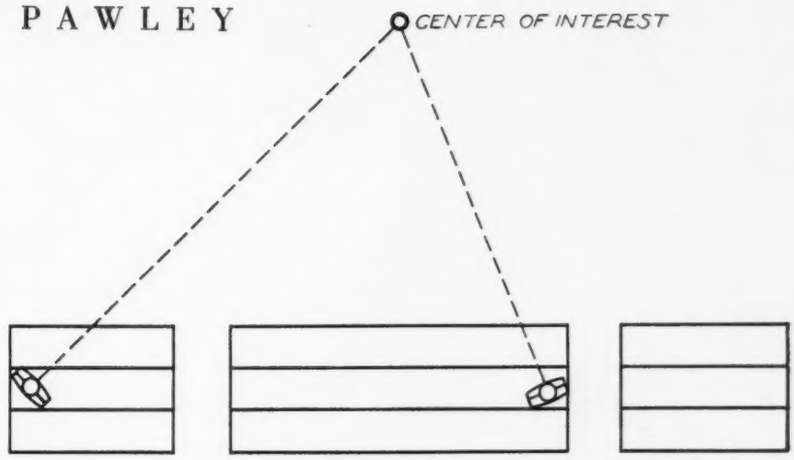


DIAGRAM A. Straight rows of seats. This is uncomfortable for the spectators in the side banks. Unequal stress is placed on the seats and backs

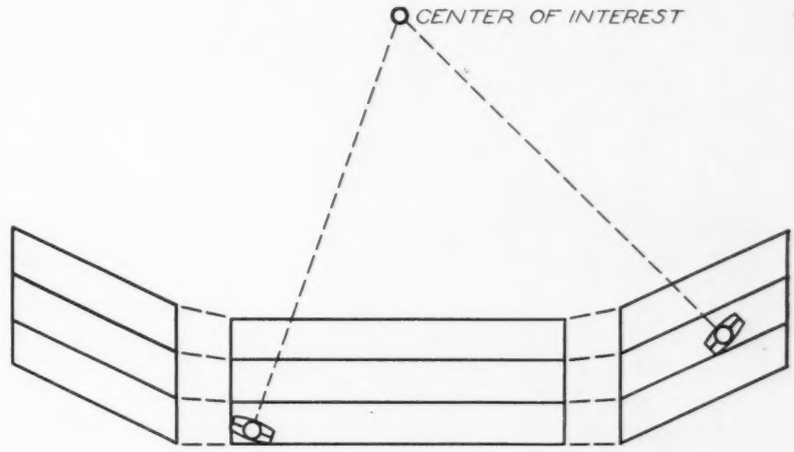


DIAGRAM B. Straight rows of seats with canted side banks present the same defects as straight rows. Rows do not line up. Aisle steps will be unsafe

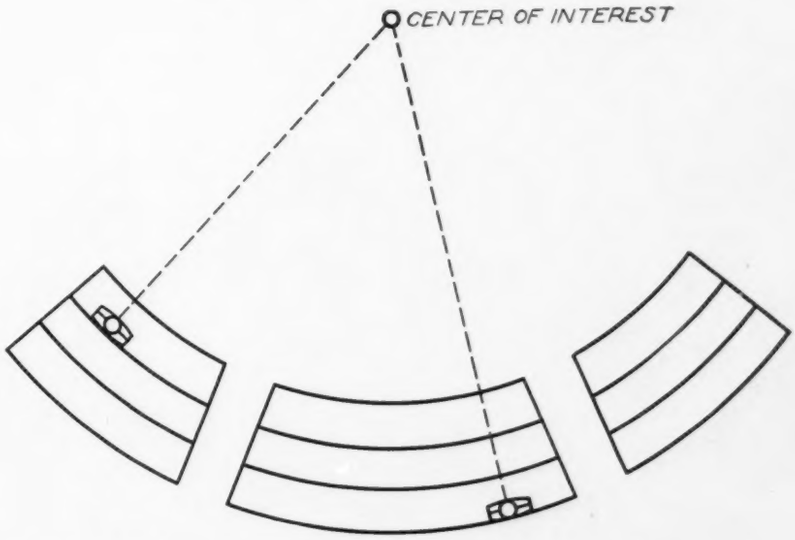
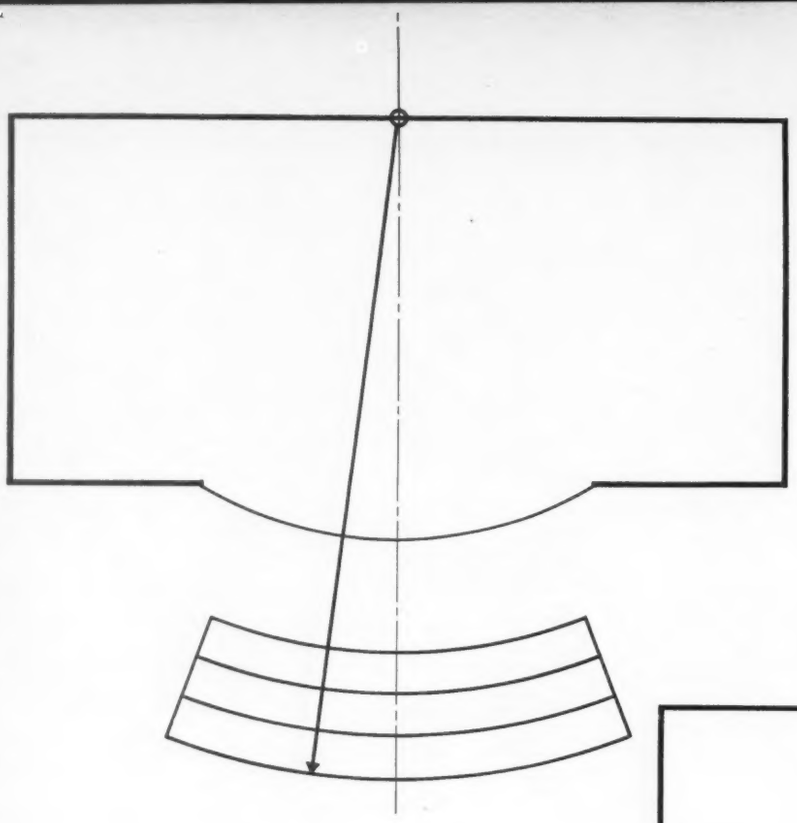


DIAGRAM C. Curved rows (radial). Best for comfort, ease of vision, safety



These differing locations have been selected sometimes without scientific vision-planning—for appearance alone, to harmonize with preconceived (or in alterations, existing) plans of stage-apron or auditorium rear wall, or to facilitate planning of a lounge behind the last row of seats. Sometimes more than one center is used, certain designers even favoring an entire series of centers.

As indicated in Diagram H, such a compromise with the ideal of a fixed center at the center of interest may be justified by the argument that by flattening the arc

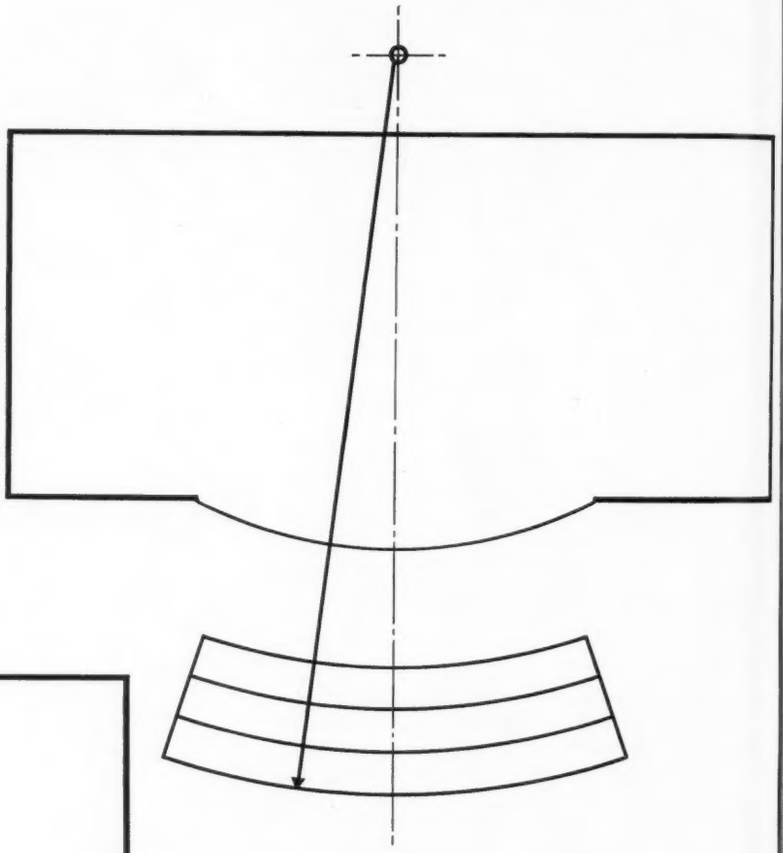
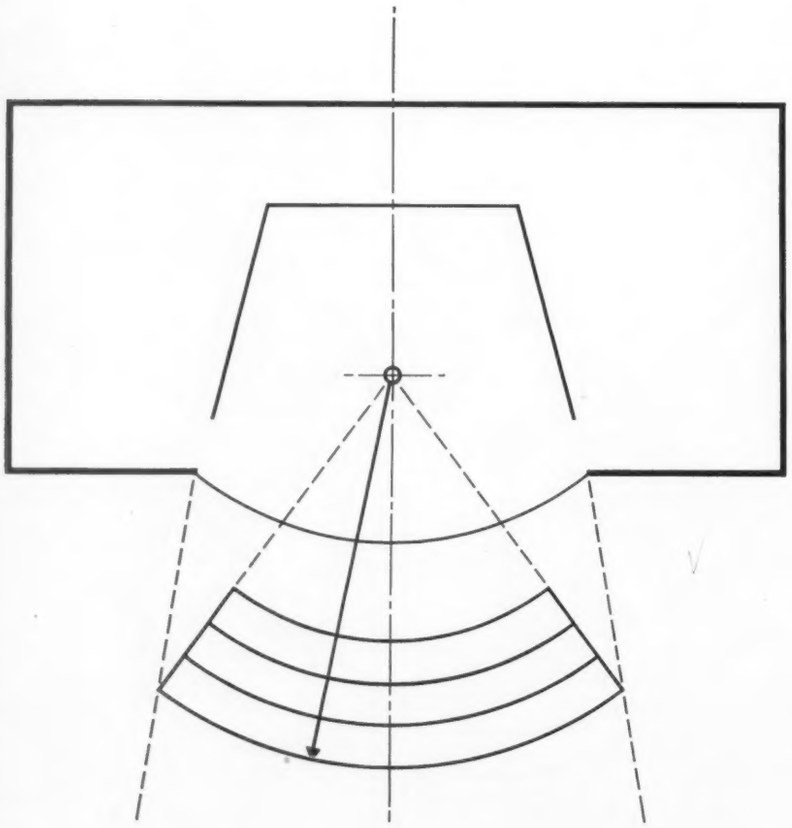


DIAGRAM D (above). At center of rear wall of stage

DIAGRAM E (right). Behind the rear wall of stage

DIAGRAM F (below). At the center of acting area



of the first row a few seats are gained. This is bad planning because these are dissatisfaction-brewing seats, gained in an area of poor visibility of the show.

Incidentally, when center-points are moved, it is important to check carefully for legal back-to-back spacing or clearances at ends and centers of rows. The spacings vary, as shown in Diagrams I and J, with these types of radii.

In the legitimate theater the additional center space provided by a shorter radius front row may help to make room for a fore-stage. In the motion picture house it will make up part of the highly desirable distance from the first row of seats to screen. Minimum radius

without special tapered seating is twenty feet.

This problem of a location for a fixed center-point for motion picture seating has been analyzed in a new way by an English correspondent of the writer, C. K. Parker, R.I.B.A., in material sent me just before the Battle for Britain began. A description of this method follows:

Apparently in England an intelligent code regulation fixes minimum front row distance from screen by establishing a maximum of a 30° angle of vision for the nearest top edge of screen. (The screen size and location in Diagrams K and L follow Mr. Parker's data.)

This solution, therefore, determines a center-point for cinema seating radii by means of the vertical limit of comfortable vision. It is interesting to note that in the case selected the front row distance obtained from the *vertical* limit of comfortable vision is $\frac{28.5 \text{ (= distance)}}{20 \text{ (= screen-width)}} = 1.4$ times screen-width, which is the same as that obtained by the writer's published analysis determined by a comfortable *horizontal* visual angle of 40° (with eye but not head movements). Mr. Parker's first row distance, however, is measured from the nearest edge of screen to side of first row. This increases beneficially the first row distance on the axis of the screen, decreasing the required horizontal visual angle there (which is the maximum anywhere in the house) to less than 36°.

VISIBILITY

While checking certain phases of the above study it became evident that efforts of informed designers and writers on seating to encourage a general increase of back-to-back spacing of rows have been partially misdirected. It is highly desirable from a vision standpoint, on the other hand, to keep row-spacing down near code limits in the front seating and to provide wider seats in these rows. This is particularly important for auditoriums with flat or slightly sloped floors which have low performance areas (stages, fore-stages, or low-hung screens which cannot be raised—a typical condition in the multi-use hall). These changes are necessary to good vision; in short, when sight-lines pass between heads.

To illustrate the obstructions caused by the heads of two people sitting in front of us, we may frame any view with our two

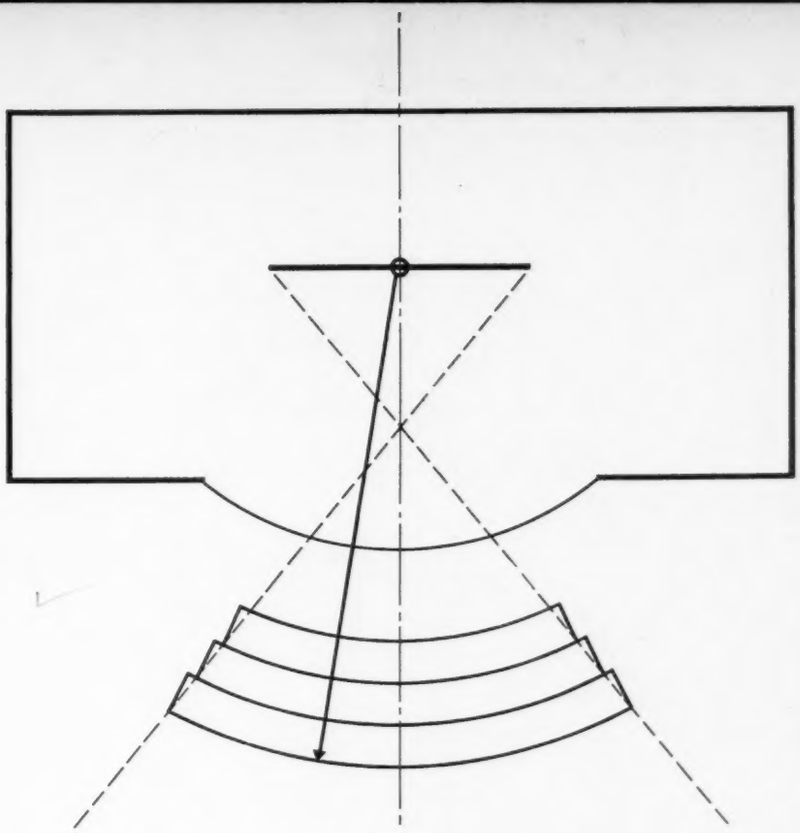
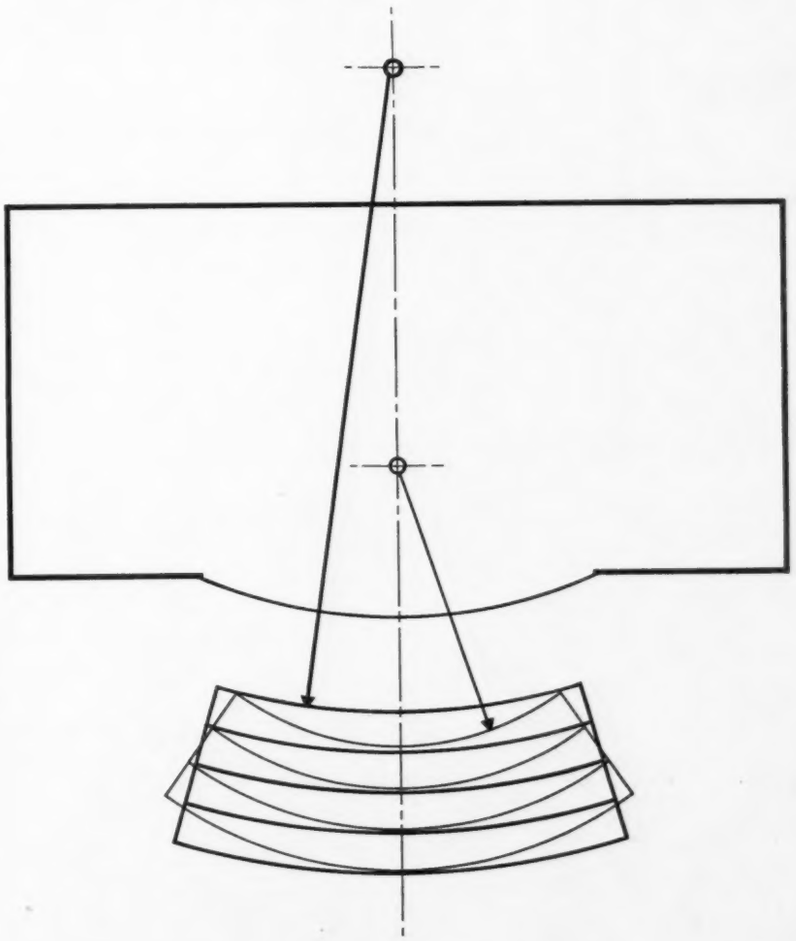


DIAGRAM G (above). Center of screen

DIAGRAM H (below). Flattened arc gains a few seats in area of bad vision



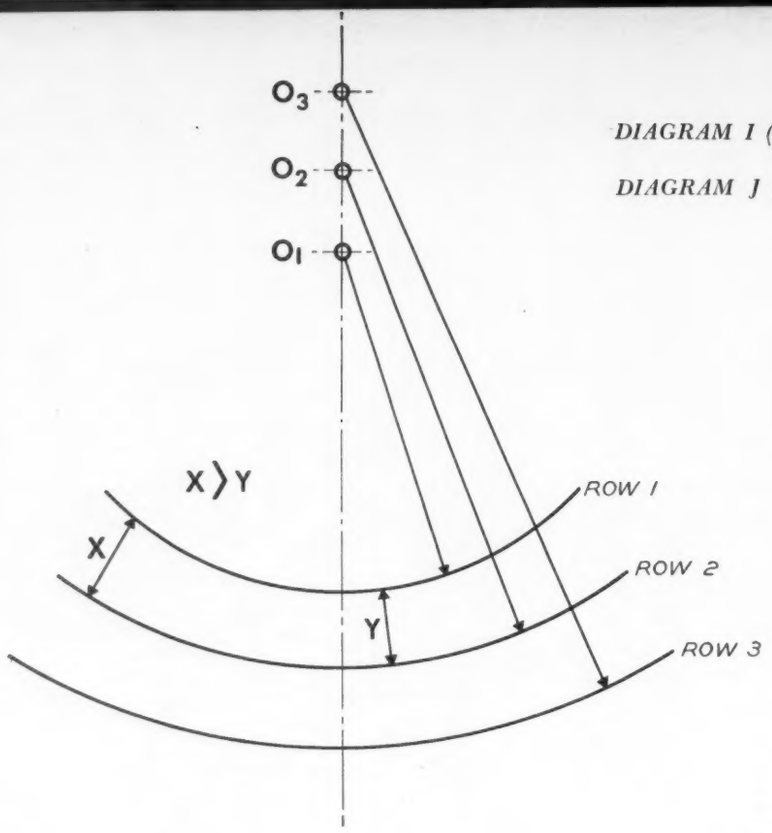


DIAGRAM I (below). Constant radius. Centers moved forward

DIAGRAM J (at left). Changing radius. Centers moved back

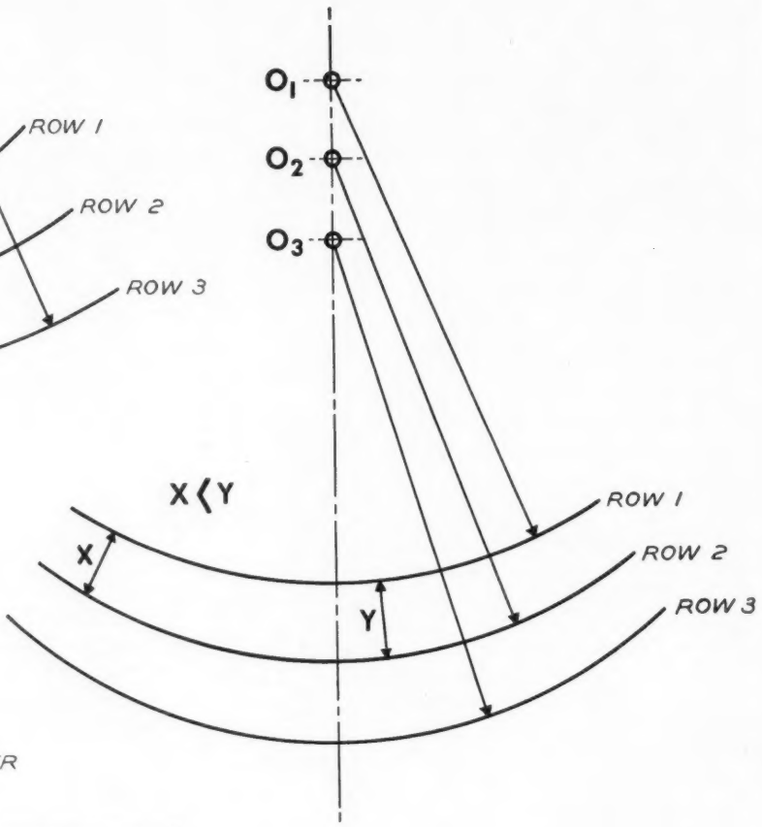
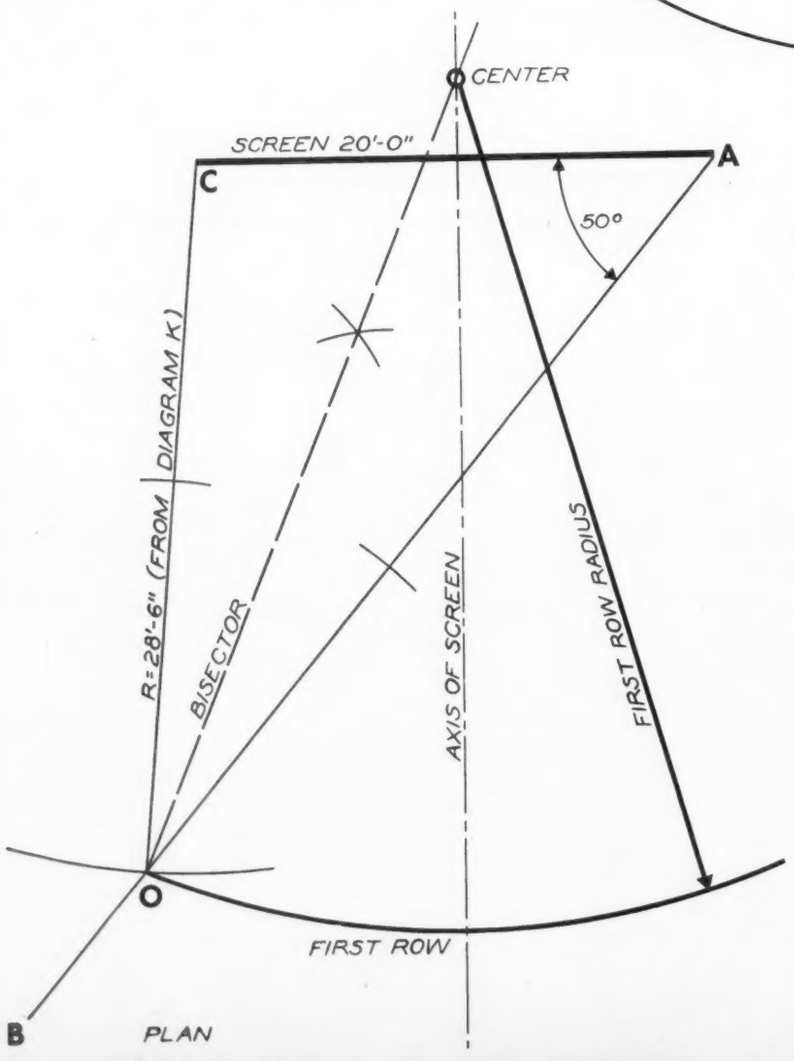


DIAGRAM L (below). AB—Limit of side angle distortion. Swing radius—28'6" from point C to intersect line AB at the point O. Point O fixes location of first row. Bisector of angle COA gives the center by intersection with screen axis



hands held at arm's length. There are two ways in which we can get a more ample view. We can separate our hands still more, or we can move them closer to our eyes without changing the distance between them. (See Diagrams M, N, O). In seating, these effects can be gained by using wider seats (thus spacing heads farther apart) or by decreasing the back-to-back spacing of seating rows. The former is the more effective and the more comfortable change.

Calculations show that with what we have for a long time considered a fairly comfortable seating layout (seats 21 inches wide in rows spaced 36 inches back-to-back) the spectator cannot see the full screen-width of a 20-foot screen between heads until he moves back to a viewing distance of at least three times screen-width. (See Diagram P). With luxury spacing of staggered rows—up to 48 inches has been used—these lateral head obstructions crowd in upon the picture. Wider seats will help this condition to some extent.

The seating zone, it has been demonstrated, should be between the limits of a 1.4 x Screen and 6 x Screen. (Refer to Diagram P again). Consideration of visibility between heads indicates that roughly the front third of this seating zone, in addition to being in front of the preferred audio-visual area (3 to 5 x Screen or scene), in the name of luxury itself penalizes paying customers a second time by letting them see only part of the show—and that between ears.

If there is any way to improve this front seating, obviously it should be done—to balance the desirability of seats throughout the house. This front zone can be helped, as suggested, by wider seats and code, or near-code, back-to-back spacing of staggered rows.

An analysis is given here in graph form of these relations between seat-widths (from 19-inch to 24-inch), back-to-back spacing (from 32-inch to 36-inch), and views between heads in the next row front. This graph will assist in checking vision characteristics of an existing seating plan, or help in designing a new auditorium. The visual standards established for any particular job will be governed in many cases by commercial requirements, but this study may illustrate and bolster arguments against ineffective seating in quick, graphic fashion. The less frequent "ideal" jobs will undoubtedly benefit by application of this analysis.

To facilitate reading the graph, the scale representing visible scene-widths is larger than that for viewing distances. Recommended first row distance, preferred audio-visual area (perhaps primarily of motion pictures although a stage show is improved by a little space for perspective and acoustical mixing), and a tolerable (2/3 or better) view of scene-width (screen or acting area) have all been indicated on this graph.

HOW TO USE GRAPH

To determine visible scene widths at various viewing distances for any specific seat-width and row spacing:

Enter graph at right on proper diagonal line for seat and spacing and check visible scene at top for viewing distances on left margin. *Example:* How much of the screen will a spectator sitting at a view-

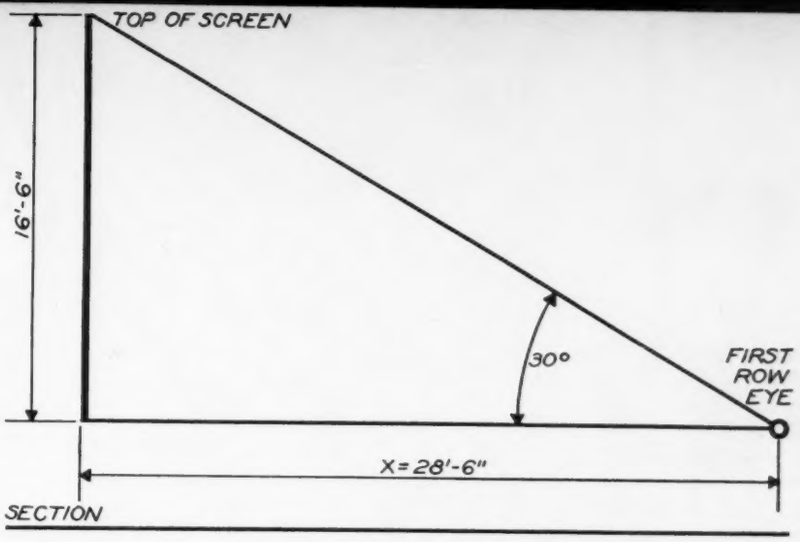
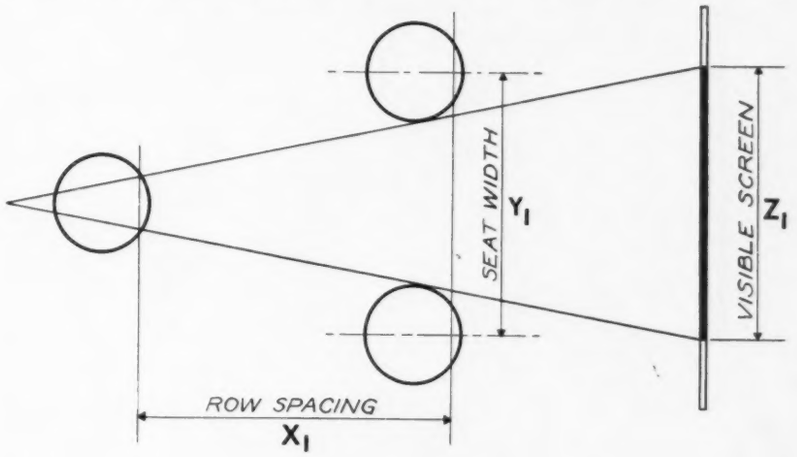
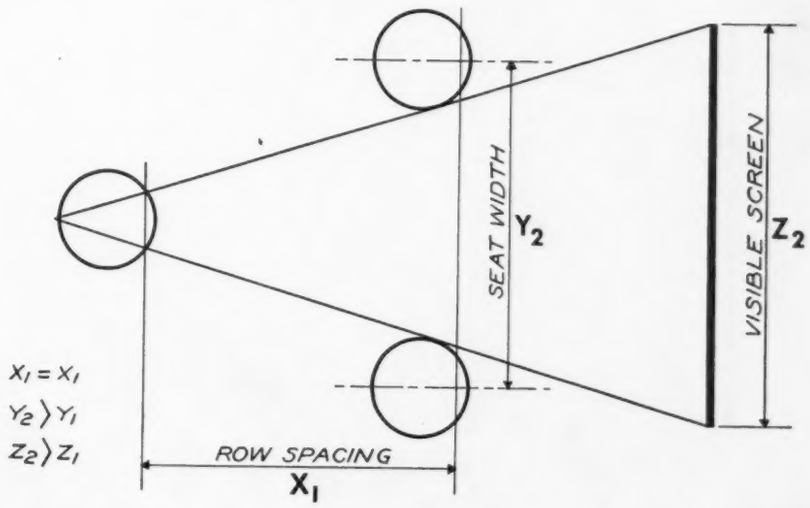


DIAGRAM K (above). $X = \frac{16.5}{\tan 30°} = 28'6'' =$ *horizontal distance of the front row from screen, producing a 30° angle of vision of top of screen*





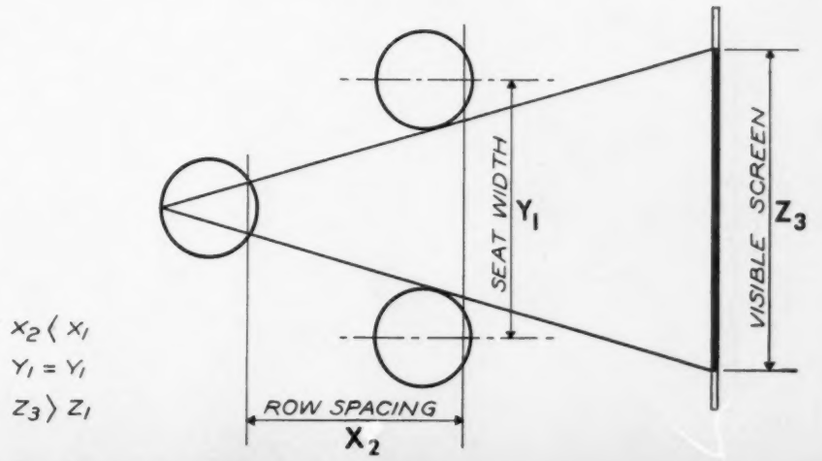


DIAGRAM M (above). Basic relation
DIAGRAM N (center). Wider seats
DIAGRAM O (right). Less row spacing

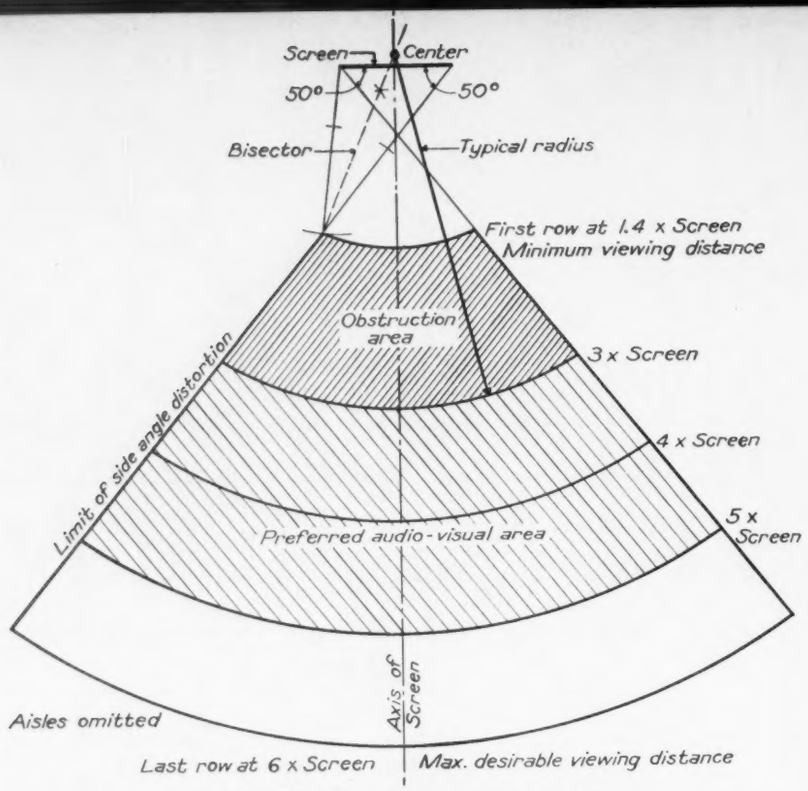
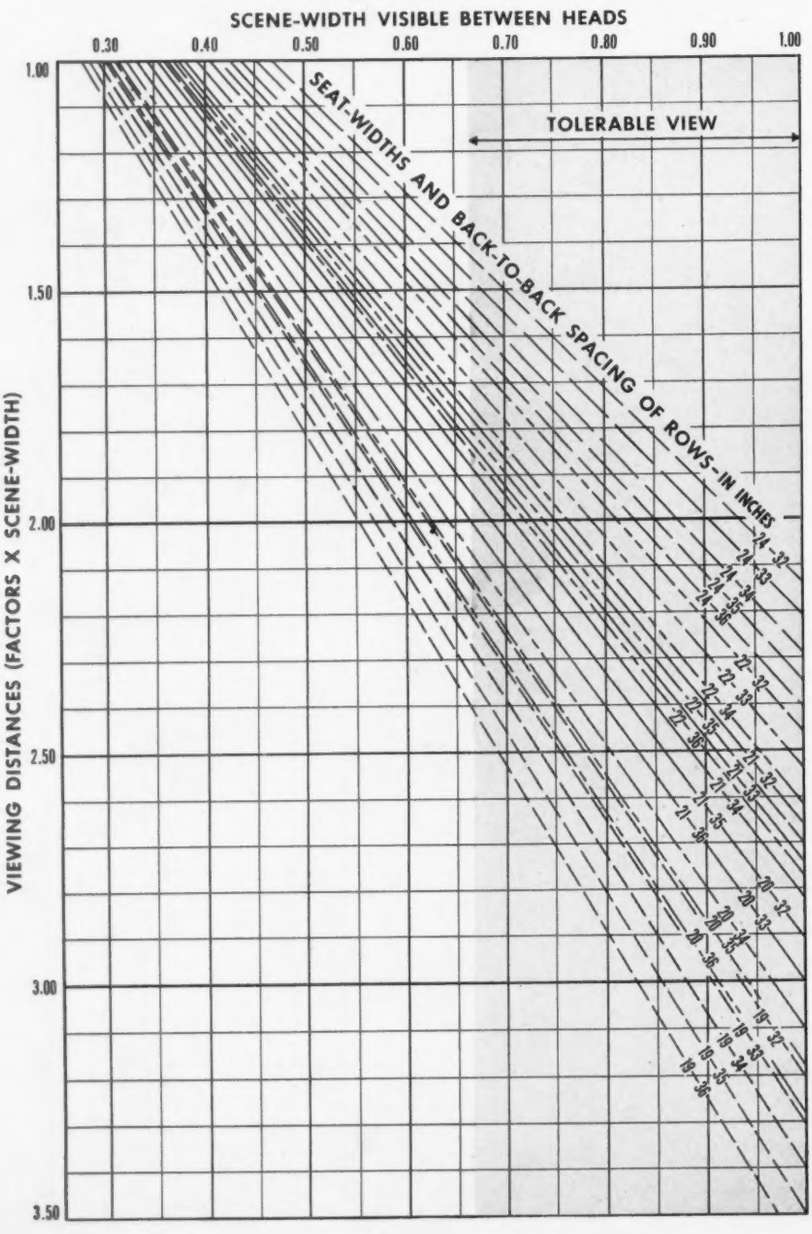


DIAGRAM P (left). Analysis of auditorium with seats 21" wide and placed in rows which are spaced 36" apart

CHART Q (below). Relation between seat widths, back-to-back spacing, views between heads in next row front



ing distance of 2 x Screen see from 20-inch seating in rows spaced 35 inches? Find diagonal for 20-35, follow to horizontal line indicating viewing distance of 2 x Screen, read vertically up for scene-width of approximately 5/8 visible between heads.

To check forward limit of viewing distance for a specific degree of scene visibility:

Read vertically down from top scale, and diagonally down to select proper seat and spacing combination for the viewing distances.

All seats of a specific size and spacing behind the viewing distance at which their diagonal line intersects the vertical line at right margin have *full view of scene,* i.e., 20-inch seats, spaced 34 inches, at any point behind 3.1 x Screen will have full view between heads.

All seats to left of this full view limit have increasingly obstructed views of scene as distance decreases.

Seats to left of vertical line marked 2/3 scene—that is, seats which lie in front of the various viewing distances indicated by intersections with this 2/3 scene line—have poor views of scene under the conditions described.

The following table gives general formulae for the different seat widths, for these relations.

VD′ = View Distance in feet, for full view.
B″ = Back-to-back spacing in inches.
S′ = Screen or scene-width in feet.

19-inch seats:	VD′ = 0.1 B″ S′
20-inch seats:	VD′ = 0.091 B″ S′
21-inch seats:	VD′ = 0.083 B″ S′
22-inch seats:	VD′ = 0.077 B″ S′
24-inch seats:	VD′ = 0.067 B″ S′

Example: At what distance from screen will a spectator in a 21-inch seat, in rows spaced 38 inches (note, not within limits of graph), have a full view of a 20-foot screen? General formula for 21-inch seats is VD′ = 0.083 B″ S′. Substituting: VD′ = 0.083 x 38 x 20. Therefore, VD′ = 63.08 feet = 3.15 x Screen.

Behind the viewing distance at which specific seating factors give a full view of scene, and in non-staggered seating, increased back-to-back spacings are desirable to increase comfort and decrease the obstruction caused by a single head between spectator and scene.